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# OFFICE OF TRAINING

# GUIDELINES for EFFECTIVE TEACHING

OTR-PI-61

January 61

# GUIDELINES FOR EFFECTIVE TEACHING

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#### GUIDELINES FOR EFFECTIVE TEACHING

#### PREFACE

The main purpose of this document is to assist you, the instructor, to be most effective in the classroom. It is directed primarily to the instructor who has had little or no experience in the teaching profession. It is also for the more sophisticated instructor who may be able to gain some suggestions and new ideas in preparing for and improving his classroom work.

Aristotle said, "All men by nature desire to know," and "All education is accompanied by pain." It is true that educators and psychologists do not fully understand exactly how the human brain functions in the learning process and, in fact, frequently disagree among themselves on what they do know. It is our responsibility as instructors, within our capabilities and knowledge, to ease the student's pain of learning, to make his task of learning easier and more productive, and to strengthen his powers of retention.

We would not accomplish the purpose of this document if we were to present theories of the learning processes. Such discussions can be obtained from the many excellent professional books. Our purpose is to present those elements in instruction which would have a practical application to you in the OTR classroom. Perhaps we have omitted elements you believe snould have been included. Perhaps the suggested ideas and methods vary from your opinion and beliefs. After you have read and studied this document and perhaps tried some of the ideas in your teaching, it would be very helpful in possibly revising the document in the future if you would send your personal comments and critique for improving it to the Educational Specialist, OTR/PPS, for consideration.

The materials appearing in this document are not the ideas of any one individual. Some of it has been adapted from the professional literature, some of it from service publications, but most of it has been contributed by OTR instructors who desired to make easier and more efficient the paths of their colleagues and successors. Consequently, there is a variation in the style of presentation and writings in the various sections of this document. To these unnamed OTR instructors, a sincere vote of thanks and appreciation is given for their many hours of work and effort.

For any type assistance in preparing, planning, or presenting your instruction, you are urged to contact the OTR Educational Specialist who will give you advice and practical suggestions on how you can conduct or possibly improve your classroom and training sessions.

#### I. COURSE AND LESSON PLANNING

#### A. INTRODUCTION

There are two circumstances under which you might be asked to participate in course planning: first, when a new course may be developed, and secondly, when an existing course is reviewed or revised. Although the second circumstance occurs much more frequently than the first, this discussion will focus on the planning of a new course. This focus has been adopted because the same materials which were produced in the planning of a new course are reviewed when you later revise that course. In addition you may find it profitable to go through the same procedures and thought processes in revising a course as you would if you were constructing a new one. Effective course planning will make any course better, whether you are an expert teacher or an expert in the subject matter. Although all foreseeable planning activity should be completed before you begin teaching a course, you should not he sitate to make valid changes during the running of the course when this seems advisable, especially to keep the subject matter up to date.

The basic element in planning any course is the course title or course subject. If you should be asked to plan a new course it is unlikely that you would be asked to develop the course title or subject. Instead, your supervisor might say, "Jim, would you work up a new course for programers on IBM equipment?" Given this course subject, you would have relatively little latitude in devising the course title.

After the course title has been identified, the first step in course planning should normally be the development of the objectives which provide the guidelines for the remainder of course planning. The second step is the accumulation of information for the course: on the background of the course content, and on suggested methods of teaching that content. The final step in course planning is the development of a number of documents which are required for various aspects of the course. During this stage you study and analyze the information accumulated in the second stage and apply the basic principles for organizing knowledge and for defining of terms. Some of the documents which result are primarily planning tools; others are planning products which are used directly in the presentation of the course. Each of these three major steps in course planning is discussed in this chapter.

## B. FORMULATING COURSE OBJECTIVES

The basic step in course planning is the formulation of course objectives. Course objectives are the goals toward which the instructor and students are working. These objectives should always be stated in terms of the student's accomplishment rather than the instructor's accomplishment. The objectives should answer the following questions:

- 1. Will the course give knowledge, teach a skill, or give an appreciation?
- 2. What level of achievement is the course intended to give: elementary, intermediate, or advanced?
- 3. What major subject field or fields will the course cover?

The objective will be the goal but some students may not achieve the objective during the course (such as "to develop a high degree of speed and accuracy in shorthand and typing").

Following are examples of some course objectives which can be tested against these questions:

The objective of this course in basic supervision is to orient the first-line supervisor to the responsibilities and authority which are characteristic of first-line supervision.

The objective of this course in instructional techniques is to introduce students to the principles and methods of teaching and learning.

The objective of the course is to develop a basic skill in the fundamentals of secret writing.

The statement of mission and function of OTR and of your own school and faculty should also be consulted. These statements may help relate the course to the overall training mission and assure you that the subject matter is properly the responsibility of your faculty.

As you work on the third phase of course planning, the writing of various texts, you may see a need to modify the course objectives. This may result from your increased familiarity with the subject, and from the development of new ideas about the course. If course objectives are modified it is necessary to check each of the course documents which you have completed for changes in course objectives that will require changes in the texts.

#### C. ACCUMULATING INFORMATION FOR THE COURSE

For some types of course, particularly writing and speaking, there is a wealth of information available for use in planning. For dealing particularly with classified subjects, there may be little or no readily available information. For this type of course you will have to exercise imagination and ingenuity to organize the information you need.

- 1. Course's Background. When a new course is developed in response to a need there may be available memoranda and staff studies which show the preliminary thinking which was done on this course. Whether or not these types of documents are available, it is usually desirable also to discuss the course's background with training officers in any offices which might have an interest in the course. The training officers may be able to tell you what they hope the course will cover, what they hope the students will get from the course, how long they think the course should be, and other details discussed.
- 2. Types of Students Who Will Take the Course. Your knowledge of the characteristics of students who will take your course will help you adapt the course to students' needs, abilities, and interests. This knowledge may, therefore, influence your choice of objectives, subject matter, and methods of teaching to be employed in the course. Some advance information on the characteristics of students who can be expected to take your course may be obtained by interviewing training officers of areas from which the majority of the students are to come. Two important characteristics which must be considered are the students' knowledge of course content and their ability to learn.

Shortly before a course begins, you can obtain some indication of students' knowledge of course content and ability to learn, from information shown on the students' request for internal training—which you will receive from the Registrar.

The students' present knowledge of course content may be measured by giving a pretest at the first or second class meeting. If this pretest indicates that all except a small group are fully knowledgeable in one or more of the basic essentials of the course, it might be advisable to schedule a special class or special sessions for this small group, rather than teaching these basic essentials to the entire class.

For certain courses students may be required to take a placement test. Such a test is now required for those taking some of the Effective Writing courses, and the test results are used to assign students to the elementary, intermediate, or advanced courses. In this case, the test results in narrowing the range of students' knowledge in each of the three levels of writing courses.

The narrowing of range of knowledge can also be achieved by requiring lower level courses, or their equivalent, as prerequisites for the higher level courses. If only an introductory course is offered, it is possible to eliminate advanced students by giving a waiver examination, as is now done for some training courses.

More specific information on students' ability to learn may be obtained by consulting the A&E Staff, which maintains records on the scores made by professional employees in standard intelligence tests and the PETB.

Frequently, the instructor will find the opportunity to personally interview each prospective student prior to the beginning of classes. In such a personal interview you will learn more specifics about each student, his background for preparation of class, his interests and need for the subject matter. During this interview you may be able to guide him to precourse reading or other preparation for the class.

- 3. Course Content. The assembly of information dealing with course content is similar to the work performed by the researcher. For courses which are similar to those taught in colleges, it is easy to find large amounts of information on course content in the Agency Libraries and the Library of Congress. However, to apply such academic-type courses to Agency materials and problems, it will be necessary to do additional searching. This additional search will be similar to the search which is necessary to find information on courses dealing with classified subjects. This search can be expedited by requesting an Intellofax listing in the Agency library on the subjects you have selected. In some cases considerable time will be saved by talking with a person in the Agency who specializes in the subjects of your interest. He may guide you to a selection of documents. In this case you can select documents which are pertinent, record the source citations (particularly the 7-digit common serial number), and make a request for copies of the documents from the Agency library. Your search may be aided by use of the OTR/IS publication dealing with research facilities and techniques. Elsewhere in this Guidelines is given information as to the major repositories of information which you might use for this search.
- 4. Methods of Teaching the Course. Teaching methods which you might use in your course are discussed in another chapter. In addition, selected references are included in the bibliography of the Guidelines from which you can obtain further guidance on teaching methods.

#### D. PRODUCING COURSE DOCUMENTS

The tools and products of course planning consist primarily of documents. Some of these documents, listed subsequently, may be required by OTR or your supervisor; you will need others primarily for planning or running the course; and others will be used by the students. Many of the documents are also needed so that another instructor can take over your class easily in an emergency. In addition, an OTR Regulation specifies that copies of vital course materials be transferred to a repository for safekeeping. This applies only to courses considered vital to the Agency's training program under emergency and wartime conditions.

Following is a list of the tools and products of course planning, which you may use as a checklist to determine whether you have completed your course planning. Obviously, not all items will be required for every course. The items, which are discussed later in detail, are listed in the approximate order in which you might work on them in planning a course. As you work on one planning tool or product, however, you may have to go back to some item prepared earlier to revise it so that the two agree with each other.

- 1. OTR Catalog or OTR Bulletin description
- 2. Annual schedule for the course
- 3. Course outline
- 4. Lesson plans
- 5. Course text
- 6. Course schedule
- 7. Assignments
- 8. Reading list
- 9. Exercises
- 10. List of outside speakers
- 11. List of field trips
- 12. List of visual aids
- 13. List of equipment and supplies
- 14. Request for classroom space
- 15. Examinations
- 16. Student critique
- 17. Reporting student achievement
- 18. Final course report

1. OTR Catalog Description. The OTR Catalog contains the following information for each course: title, brief statement of course objectives, prerequisites (clearance, and prior training or equivalent experience), enrollment, length of course (in weeks and class hours), location, and a short description of course content and methods of instruction. When a new course is introduced, a memo giving the above details should be sent to the Registrar's Office so the description can be published in the OTR Catalog, the OTR Bulletin, and in Special Bulletins which supplement these publications. If any of these elements is changed significantly in an existing course, a memo should be sent to the Registrar's Office indicating what portions of the existing descriptions should be changed.

The number of students who will be accepted in any one running of the course is fixed by considering the following factors, among others: maximum capacity of classroom; maximum number of pieces of equipment (such as typewriters, or stereoscopes) available for use at any one time; method of teaching to be employed (many more students can be accommodated with the lecture method than with the demonstration method); amount of individual work with students by the faculty; and number of instructors assigned to the course.

The length of a course may be specified by the offices requesting the course, or may be determined by the school/or instructor. If you are asked to determine the duration of a course it is generally advisable to consult training officers in offices from which the majority of students will come, and your own school chief. The same individuals should also be consulted as to a need or preference for full- or part-time instruction, daily or less frequently. After a course has been established it may be advisable to make changes in one or more of these features for individual offerings of the course. For example, one office may request a special running of your course for a group of its personnel and may ask that the course be given in half the usual number of class hours on two mornings a week at head-quarters. Another office may request that the same course is given full-time for three days at a place outside the local area. Such individual modifications of the course must be approved by your school chief.

2. Annual Scheduling of Courses. OTR issues an annual schedule of courses which shows the following information for each course: course title, whether full- or part-time, total number of class hours, dates on which it is planned to offer the course during the year, and additional necessary information such as the GS grades or the specific office for which the course is intended. The dates of courses are confirmed during the year in the bimonthly OTR Bulletin under the section headed "Registrar's Reminders." The annual scheduling of a course is a part of course planning that continues whether an existing course is modified or not.

Items which you should consider in setting course dates for an annual schedule include:

- (a) Firm commitments for other courses which you have to be teaching, courses which you must take, vacations, and holidays.
- (b) The demand for the course. The demand for some courses may be such as to require only one running a year. For others the demand may be sufficient to permit them to be offered as often as it is convenient for the instructors.
- (c) The amount of time required between runnings. If there is considerable demand for a course sufficient time should be scheduled between successive runnings for such necessary activities as grading final examinations, writing the course report, making necessary revisions in the course, and replenishing course supplies.
- (d) Conflicts with other courses. The scheduling of your course may have to consider possible conflicts with other courses in the use of classrooms or the need of a student to take another course either before or after the one you are scheduling.
- 3. <u>Course Outline</u>. The course outline is intended to show in organized form the subject matter to be considered in the course (see sample course outline on page 5). The course outline may be used to prepare the course schedule (discussed below), and may be replaced by the course schedule.

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The course outline utilizes the principles of organization and outlining, with stress on the relationship between good organization and good teaching methods. This means that the outline may follow one or more of the following orders:

- (a) Beginning with the basics which are used throughout the course, and then showing other elements;
- (b) Beginning with simple ideas and working up to complex ideas;
- Beginning with major goals or viewpoints and then working down to specific or detailed goals or purposes;
- (d) Beginning with the known and going to the unknown;
- (e) A logical sequence, as dictated by the subject, which may show the elements of a process in the order in which they occur; or
- (f) A functional sequence in which various elements of the subject matter are grouped together because they are functionally related or contribute to the solution of a common problem.

If a course deals with student's acquiring a skill, the course outline may utilize the logical sequence, in which case it would draw upon a detailed analysis of that skill. This analysis would involve breaking the skill into its components, and deciding the order in which the components should be taught and practiced. Later, in drawing up your lesson plans, you will have to choose the specific method by which each component of the skill is to be taught and practiced.

## Sample Course Outline for

#### RESEARCH TECHNIQUES COURSE

- I. Introduction
- II. Research planning
  - A. Research charters under which the analyst operates
  - B. Terms of reference
  - C. Project work schedules
- III. Utilization of information repositories
- VII. A. Analysts' files
  - B. Libraries and registers
  - C. Use of consultants
- IV. Assembly of data by analysts
  - A. Analyst's inbox and the document-routing process
  - B. Note taking
  - C. Use of libraries and librarians
  - D. Use of maps and graphics for the assembly of data
  - E. Use of field trips for the assembly of data
- V. Utilization of information collectors
  - A. Analysts' collection tools
    - 1. Requirements
    - 2. Briefings
    - 3. Debriefings
    - 4. Document evaluations

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- B. Capabilities of collection organizations
- C. External research projects
- VI. Analytical process -- techniques and tools
  - A. General steps in analysis
  - B. Additional steps in analysis of quantitative data
  - C. Mechanical aids in manipulation of data
  - D. Special analytical techniques
- VII. Mechanics of report preparation
  - A. Major parts of reports
  - B. Sourcing
  - C. Classification
  - D. Use of graphic aids
  - E. Use of tables
  - F. Function of editors
  - G. Final processing
  - 4. <u>Lesson Plans</u>. A lesson plan is an outline of the activity of the instructor and student pointed toward achieving a specific objective (see Lesson Plan form). A lesson plan may cover a time unit of activity, one objective, or one item of subject matter.

The estimates of the amount of time required to complete each lesson can be used in drawing up the course schedule. If the course schedule is prepared before the lesson plans, the amount of time allocated in the schedule for each lesson will give some indication as to how much activity can be included in the lesson plan.

A prime purpose of lesson plans is to assure the fulfillment of course objectives. While working on a lesson plan you can give careful and thorough thought to all elements necessary to fulfill lesson objectives which contribute to the course objectives. Lesson plans also provide a permanent record of recommended activities which permits you to refresh your memory before each presentation of the lesson, provides a checklist or time schedule to use during the presentation of the lesson, to assure you that you have covered all vital points, and permits additions and improvements in organization and content to be made easily. Lesson plans also provide detailed instructions for others who assist you or who take over the course either temporarily or permanently.

The introduction and presentation sections of the lesson plan usually rely heavily on lectures although the presentation may also be made by, or in conjunction with, the medium of films, readings, related training aids, or exercises. If lectures are used, the lecture outline may be included in the body of the lesson plan or as an annex to the lesson plan.

When a lesson plan includes practical exercises or assignments involving detailed instructions or supporting materials, it is often best to have these duplicated so they can be handed to the students. A copy of the duplicated materials can be included as an annex to the lesson plan (see discussion below of assignments and exercises).

While a lesson is being taught you should make a practice of writing notes on possible additions, corrections, and revisions which might be made before the next running of the course. Good ideas on course improvement may come to you during a lesson and might be forgotten unless they are recorded promptly.

A sample Lesson Plan is herein suggested not as an ironclad format to be followed but rather as a suggestion of the elements to be included.

#### LESSON PLAN

- A. TITLE (Should specifically identify instructional unit. Example: The Use of the Informal Organization by Management)
- B. OBJECTIVES (States reason for teaching unit; may limit subject matter. Example: 1. To develop a knowledge about.... 2. To develop skill in.... 3. To develop an attitude of....)
- C. EQUIPMENT AND SUPPLIES (List all training aids, tools, manuals, references, workbooks, and texts for lesson)

#### D. CLASS ACTIVITY

- 1. <u>Introduction (Explanation)</u>
  The introduction is usually a lecture and should generally be written in outline form. It should:
  - 1. develop the student's interest (motivate),
  - 2. direct his thinking toward desired goals,
  - 3. delineate scope of lesson (objectives),
  - 4. tell student the value of subject matter,
  - 5. tell what teaching methods will be used, and
  - 6. tell student what will be expected of him at the end of the lesson.
- 2. <u>Presentation</u>
  Time: x minutes
  The presentation is your "plan of action"; it is <u>what</u> you are going to teach and <u>how</u> you are going to teach it. It includes:
  - 1. an outline of subject matter to be covered, including definitions of important terms,
  - 2. notes on methods of instruction (see another part of this handbook for discussion of techniques of instruction),
  - directions for the instructor, such as: "show chart No. 5," "demonstrate," "show training film,"
  - 4. specific questions instructor should ask or the discussion to be initiated.

Note: Any presentations to be made as lectures should be written in outline form.

- 3. Application (Practice)

  Permits student to apply or use immediately the skills or knowledge you have taught. It includes student work on exercises, field problems, his practice with equipment, and the instructor's suggestions for student activities. This may be accompanied or followed by a critique of the students' work.
- 4. Summary
  Time: x minutes
  The summary recapitulates main points of the material, ties up loose ends to organize
  the material in the mind of the student, and is the place in the plan to strengthen weak
  spots in the instruction. This phase may come after the test.
- 5. Test
  If information or attitudes are imparted, either an oral or written test may be given; if skills have been taught, then performance-type tests are best. The test should be followed by a critique of errors made in the test by the students.
- 6. <u>Assignment</u> Time: x minutes May be made at beginning or at end of class. May be distributed in reproduced copies.

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5. Course Text. Some students feel "lost" in a course unless they have a text to read. For a few OTR courses it is possible to use commercially published texts. If you choose a text which is not published by the Office of Training, purchase orders must be submitted in advance of the beginning of the course so that you will be sure of having the text on hand when the course begins.

For many OTR courses, however, there are no texts and little or no other written material available. If your course involves much detailed information, and there is no text available, you might consider writing a course or student text which can be reproduced and given to the students. This can be done relatively easily and quickly if you have detailed notes and have used them in several runnings of the class. A course which substitutes text readings for lectures requires fewer class hours and may result in better learning by the students. Instead of lectures class work can consist of text readings, discussion of sections read, and testing on these sections.

If a course text is primarily for use in OTR courses, and is reproduced by ditto or mimeograph, you will not need to have the text checked outside your faculty.

6. Course Schedule. Course or daily class schedules are useful to the instructor, the students, and any office or individuals who provide assistance in the course. It is generally advisable to send a copy of the course schedule to any guest speakers, to individuals who will run projectors or tape recorders, and to librarians who will assist students with documents and books. The schedule will provide your contributors with both a confirmation and a reminder of the part they are to play in the course. It is also helpful to a guest speaker to know what subjects are covered in the course before and after his lecture.

The course schedule may include the following items: subjects to be dealt with and activities to be carried out each day; the time at which each activity is scheduled to begin; names of instructors or guest speakers; and, if the class does not always meet in the same classroom, rooms where the class is to meet (see sample course schedule).

The draft of the course schedule may be written by utilizing a copy of the course outline. The date and time can be written in front of each item and there should be an indication of the class activity; i.e., lecture, reading, discussion, or exercise. Additional class activities related to any one activity can then be inserted. When the course schedule has been drawn up, it may be possible to eliminate the course outline, since it is used primarily as a planning tool.

It may be difficult to draw up the schedule for the first running of a course, because there may be no guide to indicate how much time each activity will require. On the first running there is often a tendency for instructors to allow insufficient time for students to complete readings and exercises and to provide little or no time for faculty feedback on student performance. It may be helpful to ask each of several associates to each make an estimate of the time required for each unit of the course. These independent estimates will give you a rough check on your own estimates. In some courses you may prefer to omit entirely any reference to exact time schedules but keep your own records as to time spent as a guide for future runnings of the course.

There are at least two approaches to estimating the amount of time to be spent on each item in the course.

- a. The first method is to allocate the total number of class hours (as stated in the OTR Catalog description) between the major sections of the course outline. The number of days or hours for each major section can in turn be sub-allocated to the subsections within that major section. The first estimates may give what appears to be too much or too little time to some subsections. This will require you to make changes in subsection time, and, in turn, modify the time for major sections.
- b. The second method is to make an estimate of the amount of time it will take to complete each subsection of the course outline. If lesson plans have been completed, the time estimates for each lesson can be used. From these figures, totals for each major section are obtained, and the total time for the course is obtained by adding time for major sections. This total, when compared with the total time available for the course, may indicate that adjustments must be made in the time estimates for major sections and subsections.

The course schedule should be followed as closely as possible, because if any section of the course is extended, later portions will have to be cut, and it may require considerable rescheduling of speakers, field trips, and classroom space. You should probably make a point of adhering closely to the schedule if you have a tendency to prolong discussions on topics in which you are particularly interested and to slight equally important but less interesting topics. In each class, however, conditions will arise that will make it desirable to extend work on one section or to reduce or eliminate others. The instructor should make notes on his own copy of the schedule to indicate modifications so that in making up the schedule for the next running of the course he can decide what modifications should be continued in the new schedule. In the revision new topics may have to be added which may mean that time cuts will have to made in other topics.

## Sample Schedule for

#### EFFECTIVE SPEAKING COURSE

| Mon, 14 March | 0930<br>0945<br>1100 | Lecture: Introduction to the course Student impromptu speeches: "My Problems in Speaking" (2-3 minutes) Do's and Don'ts in Public Speaking   |
|---------------|----------------------|--|
| Wed, 16 March | 0930<br>1100         | Student speeches on definition of a term (3 minutes) Instructor's critique   |
| Mon, 21 March | 0930<br>0945<br>1030 | Discussion: Review of last session Lecture: Organizing an Intelligence Briefing Discussion: Use, Design, and Production of Graphic Aids  |
| Wed, 23 March | 0930<br>1015<br>1100 | Lecture: The Principles of Impromptu Speaking<br>Student extempore speeches (4 minutes) using a graphic aid<br>Instructor's critique   |
| Mon, 28 March | 0930<br>1015<br>1100 | Lecture: The Use of Example in Public Speaking Student impromptu speeches (3 minutes). Each student is given a card indicating the subject of his speech. Instructor's critique          |
| Wed, 30 March | 0930<br>1015         | Lecture: Techniques in Reading from Prepared Text Student "Aesop" speeches (3 minutes), telling a story to illustrate a point from which a conclusion can be drawn Instructor's critique |
| Mon, 4 April  | 0930<br>1015<br>1100 | Lecture: How to Handle Questions Student reading of speeches from prepared text (2 minutes) Instructor's critique  |
| Wed, 6 April  | 0930<br>1015<br>1100 | Lecture: The Speech of Introduction<br>Student extempore briefings (5 minutes plus 2 minutes of questions)<br>Instructor's critique  |
| Mon, 11 April | 0930                 | Continuation of last session   |
| Wed, 13 April | 0930                 | Student extempore briefings (1 minute introduction by another student; 18 minutes for briefing and questions). Written critiques of each speaker by instructor and members of the class. |
| Wed, 20 April | 0930<br>1115         | Continuation of last session Lecture: Course review and conclusion   |

7. Assignments. If students are given an assignment to be done outside the class and it requires a detailed explanation, it is usually desirable to make duplicate copies for the students' use. If the course involves a number of assignments it is usually best to give all at one time on an assignment sheet. Written assignments greatly reduce misunderstandings by students. Even in a highly motivated group of students, if assignments are given orally, it is inevitable that some will not hear all of the instructions or if they do, they will hear them incorrectly, and assignments will be done incorrectly. Written assignments also greatly reduce the amount of time required for making assignments in class.

It may, in fact, reduce the making of assignments to announcing: "During the next hour please work on assignment number 8." (Discuss what is to be done and required.) "Are there any questions about the assignment?" Inevitably, students will misinterpret some items on the assignment sheet. This may indicate that parts of the assignment are open to two or more interpretations, and that you should make note of such ambiguities or areas of misunderstanding and correct these for use in the subsequent class.

In some courses you may wish to give a pre-course assignment. You may require the students to select a problem or project to be worked on in the course; read certain material; or bring some material from their office files to a later class. It is generally best to write out these pre-course assignments, have them dittoed, and then discuss them with the class.

- 8. Reading List. In some courses the students are asked to do readings from a number of books which may be on reserve in the Library, or available in some other place. If there are a number of sources, it will save class time to have the list of readings dittoed so it can be handed to the students. Extensive reading lists can be improved if the instructor includes a critical comment about each reading and indicates what the student should look for in each one.
- 9. Exercises. An exercise differs from an assignment in that it normally deals with student activity usually utilizing materials prepared by the instructor.

Exercises in OTR usually provide the student with a body of information which duplicates as closely as possible the information and procedures used in the actual office situation. For this reason it is often advisable to obtain data for exercises from specialists who work with the type of materials with which the exercise is to deal. If you explain to the specialist the purpose of the exercise and the type of materials you think will be required, he will usually be able to suggest topics and may often be able to give you copies of necessary materials. If he does not have extra copies the source citations should be written down so that the items can be ordered from the Library.

In some cases you may want to bind together all assignments and exercises, or all exercises, into a student workbook. The workbook may be looseleaf or stapled, depending on whether the student will have to remove individual sections or pages.

As with all other materials given to the student, you should be constantly alert to making revisions of exercises. When students work on exercises it may become apparent that some instructions are unclear, or some supporting materials may be unnecessarily misleading. In addition, an exercise might become outdated, or inappropriate for what you intend to teach.

10. Outside Speakers. Some courses involve the use of speakers from outside the faculty, and occasionally, from outside the Agency. It is desirable to have a complete list of these speakers, their titles, offices, and telephone numbers. Arrangements should be made in advance to be sure that the individual will be able to fit his appearance at your course into his schedule and to give him time to prepare for his appearance, including his preparation of handouts and visual aids. Details on arranging for outside speakers are discussed elsewhere in this Guidelines. As stated earlier, it is often advisable to send a copy of the course schedule to each guest speaker as confirmation and for his use. In addition, it is a good idea to call each speaker a few days before his presentation to confirm the time and place, which also serves as a reminder. Your guest speaker may desire you to have (or you may volunteer

such a service) a training aid made for his presentation. It will be your responsibility to follow through on this request and see that the aid meets with his approval and is such that it accomplishes the purpose for which it was requested.

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- 11. <u>Field Trips</u>. Field trips, which are visits to offices and installations outside the classroom, require advance arrangements. Visits to Government offices and installations are made through OCR/LCD; visits to non-Government offices and installations are made through OO/C. The list of field trips should include the name, title, and telephone number of the OCR/LCD or OO/C contact, as well as of the person in the office or installation who will meet your group. It is a good idea to call each contact a few days before the trip to confirm the time and place. If it is necessary to postpone or cancel the visit, or if the group is going to arrive late, the contact should be notified as soon as possible.
- 12. <u>Visual Aids</u>. Some types of information are taught best by the use of visual aids; in other cases, visual aids supplement other effective teaching methods. The list of visual aids can be compiled from individual lists contained in the lesson plans. This list is useful as a check list to determine whether all the aids are on hand. Suggestions on planning, obtaining, and using visual aids are given elsewhere in this Guidelines.
- 13. Equipment and Supplies. If a variety of equipment and supplies are used in a course, it is advisable to write up a list of these items. The list can be compiled from items shown in the lesson plans. Such a list speeds the checking of stocks before the beginning of a course. This checking is particularly important for expendable supplies which are not stocked by the Supply Officer and which must be ordered considerably in advance of the running of a course. It may also be desirable to have a checklist of classroom facilities to be sure that everything is on hand and in working order. Such a checklist might include the following:

Are tables available, if required?

Are there sufficient chairs, of the proper type?

Is a safe and burn-bag available for storage?

Are all lights working?

Can heat be regulated?

Can windows be opened?

Are air conditioners working properly?

Are venetian blinds in working order?

Is there a waste basket, blackboard, chalk and eraser, clock, ash trays, pencil sharpener, coat rack?

Is a phone necessary and available for use of the instructor and students?

- 14. Request for Classroom Space. In some faculties, verbal arrangements or memos are required in advance of a course to request classroom space, particularly when classrooms are used by several faculties. These requests are coordinated with the OTR Registrar.
- 15. Examinations. Evaluation procedures are discussed in detail in a special section of the <u>Guidelines</u>. At the conclusion of most courses, the instructor must write a report of student's performance. This task will usually be aided if one or more examinations are given during the course. In addition, however, tests can also be used as a teaching device for student motivation and learning. In many cases it is advisable to draw up examinations before a course begins, although in a few cases it may be advisable to wait to see how the students develop before determining the type of examinations to be given.

In some courses it is desirable to give a pretest to determine a student's background knowledge or level of skill. The pretest is especially valuable in permitting the instructor to make last-minute adjustments in the content and teaching methods of the course. The pretest may indicate that one portion of the course can be covered briefly or omitted because most students know all about it, and the few who do not know can be tutored. The test may also

show that other portions of the course should be stressed because the students have little or no knowledge about the test or the subject. A pretest can also motivate some students if it shows them that they are lacking in knowledge or skills which they thought they possessed.

16. Student Critiques. Here we are speaking of the critique of a course by students. These critiques raise some knotty questions. Probably the greatest of these is trying to decide how much importance to attach to them. You must decide this for yourself taking into consideration the nature of the students and whether they are in a position to judge the content or methods within your course.

A related problem is that of balancing conflicting statements. Frequently one set of critiques will include both positive and negative statements about the same aspects of the course. Students are reacting in terms of personal opinion so naturally they will vary. It is tempting to be overly sensitive to the criticisms and at the same time to glow a little too happily over the praise.

As a general rule it is a good idea to encourage critiques, oral or written. It gives students a chance to express themselves to you and helps convince them of your sincere desire to do a good teaching job. It also takes cognizance of the fact that the student is often in a position to recognize a teaching approach that was particularly difficult for him to understand and, equally as important, he knows when his interest flagged. We are not in business to provide entertainment but on the other hand there is a high correlation between interest and in a subject and the amount of learning that will take place.

Students' critiques will be particularly valuable to you after the first running of a course and may also be of value after subsequent runnings. Statements by students in their critiques will often supplement your own judgments on course revisions which are required to adjust the course to more closely meet Agency and students' needs. Critiques may show, for example, that a course which adequately met students' needs for a number of years must now be refocused because of recent changes in office policy, in types of work, or in equipment (such as the addition of electronic data processing machines).

Whether you solicit critiques daily, weekly, or only at the end of the course depends on your needs, i.e., whether or not this is a first running and thus you want as much information as you can get, or whether you are particularly interested in one aspect of the course. The size of the class will also make a large difference because culling comments from numerous critiques can be a sizable administrative task. The critique form should be given the students at the beginning of the course so that they may jot down specific suggestions during the course while fresh in their minds rather than make the students try and recall at the end of the course some helpful comments relative to the training at the beginning.

The best method of preparing a critique form is to list the major areas of the course with the objectives of each, provide enough space to encourage comments and be sure the students have time to fill it out. It is better to encourage the students to comment on those aspects they feel strongly about rather than forcing them to remark on every aspect of the course. The critique form should be so constituted (in addition to your oral instructions on how to complete the form) that the students will give you specific statements and suggestions relative to the improvement of your course rather than generalities ("course was good," "course needs to be longer," etc.). Basically, generalities are useless to you when you try and use them in modifying your course.

- 17. Reporting Student Achievement. A report on each student's performance in, or attendance at, a class is required in all OTR courses. Details relating to reporting of student achievement are explained elsewhere in this <u>Guidelines</u>.
- 18. Final Course Report. The chief instructor is responsible for writing to DTR a final course report on the completion of his course. Such reports should be so constituted that they furnish DTR with complete knowledge that any director of training needs and desires. It is suggested that you consult with your School Chief for current guidance as to the method, format, and content of the course report required by your school. It is helpful to review reports on other courses and to talk with your supervisor, to obtain guidance on the types of things a course report should contain. During a course it is advisable to make notes on the programs of the course, unusual features, and recommendation for changes which might be included in the final course report.

#### II. METHODS OF INSTRUCTION

#### A. THE LEARNING PROCESS

Learning is an active process, and the action must be primarily on the part of the student rather than the instructor. Although the instructor can present facts to the students, stimulate and guide them, the main learning effort is up to the student. In many instances, however, learning does not take place because some instructors still lecture while students listen. Such instruction is based on the "flower-pot" theory—the theory that students are like flower pots on which the waters of wisdom are sprinkled. The flowers soak up the water which is converted into growth with no apparent effort from the flowers. The "flower-pot" theory is based upon two false assumptions: one, that students will remember everything given in a lecture and, two, that the information remembered will be used later. To show the fallacies of these assumptions, consider how learning takes place. In the following paragraphs are some instructional considerations based upon accepted principles of learning and teaching and obviously related to our problems.

- 1. Motivation is the very heart of the learning process. Adequate motivation not only sets in motion the activity which results in learning but also sustains and directs it. The average student works below his maximum capacity because of a lack of adequate incentive to learn. What a student learns is partly determined by the instructor and his teaching methods, and perhaps to a much greater extent, this learning is determined by his ability, motivation, and work habits. Interest in the subject is also a source of power in motivating learning. General behavior is controlled by emotions as well as intellect but excessive emotional tension usually decreases efficiency in learning.
- 2. The learner needs to have a knowledge of objectives. Learning is generally faster and transfer is generally greater if the learner understands the objectives of the task on which he is working. In problem solving, showing the student the solution to one or two problems aids him very little in the solution of subsequent ones. Telling him the general fundamentals upon which the problems were based aids him somewhat more. Giving him a selected series of problems that enables him to work out the principles for himself results in the most rapid learning or the greatest amount of transfer to later problems.
- 3. The material to be learned must be meaningful. The subject should be related to something with which the student is already familiar. Information which does not have personal meaning will soon be forgotten. Telling students that material is important is not enough. They rapidly tire of being told this when they cannot see its application or necessity to their assignments. Learning is more efficient and longer lasting when the conditions for it are real and lifelike. Realistic practice contributes extensively to learning.
- 4. The learner must receive satisfaction and success. He must make successful use of what he is learning. A person learns those things which give him satisfaction (e.g., accomplishment) and forgets those which do not. If you cannot give him practical work at least pose problems or questions to him which he can solve by making use of the material or answer to his satisfaction.
- 5. The learner must be active. A fundamental tenet of education is "the student learns by doing." This "doing" implies physical or mental activities that are purposeful to the student; not just activity for the sake of action. The student learns most thoroughly the activities in which he participates most wholeheartedly. Structure your material so that the student must constantly relate, recite, practice, or think about the subject or skill at hand. Passive listening is the worst possible way to gain knowledge. The task of the instructor is to stimulate interest, pose questions and problems, and by a variety of instructional methods keep the student actively engaged in thinking about and working on the subject.

- 6. The learner must know of his progress. If you are presenting new concepts, new procedures, or new skills you have to find some way to let the student know his extent of understanding the material. Put him into situations where he is required to use the material and then let him know how well he does. The more immediate this feedback is to the student, the more lasting will be his retention and the more effective will be your instruction. This feedback on a problem or exercise satisfies the student's question, "How am I doing?"
- 7. The student must have opportunity to practice. If your subject should be retained either in the form of a knowledge or of a skill, then make certain there is repetition and practice provided for the student. Each repetition greatly enhances his retention of the information. Do not allow repetition or practice to the point of fatigue or boredom. If you have a mass of material which is to be practiced plan the practices over a period of time rather than all in one session.
- 8. Apperceptive background. Because your instruction must be aimed as directly as possible to the individual student and because you should be flexible enough to adapt your instruction to the class needs, you have to find out as much as possible about the background of your students. This is sometimes referred to as the "apperceptive background" of the students. It is very difficult, if not impossible, to start your instruction on any given level if your students are not knowledgeable up to that particular level. You can find out about your students by: having each student at the beginning of the course speak five minutes telling about his background, particularly with reference to the subject matter; individual talks with each student prior to or at the beginning of the course; administering a short pretest including course terminology on the subject matter; consulting the official files on each student (use of A&E files).

Learning to play golf illustrates how learning takes place: the student desires to learn something (motivation), he knows exactly what he wants to learn (objective), he studies to build up some knowledge of the subject (effort), he considers how this knowledge applies to the job (thinks), the instructor guides him until he understands what he is to do and how he is to do it (comprehends), he then repeats what he did in order not to lose the proficiency he has achieved (reviews).

"I decided to take up golf; my friends played and I wanted to play, too. I wanted to play the game well enough to compete with them; it would give me satisfaction to be recognized as a good golfer. I had an objective and was motivated to achieve it. Being motivated to play golf, I bought some clubs and went out to the course to practice. The game was not entirely new to me. I had read about it, had watched others play, and had become familiar with golf jargon; however, I lacked experience in applying what I had seen and read. I knew that I should avoid such things as slicing, hooking, and topping. Nevertheless, I sliced, hooked, or topped whenever I hit the ball. Obviously having only read how to drive a golf ball would not make me a good golfer.

"Next, I began the serious business of learning the game. I did more than swing at the ball. I examined how I swung the club, remembered how I was supposed to swing it, compared the two, and determined what was wrong. The information I had read on golf helped me with this procedure.

"After I had done all that I could do to improve my golf technique, I was ready for some instruction. I got a professional golfer to watch me try my swings, help me spot my errors, and explain the correct technique. Under his guidance I was able to improve my whole game."

(Likewise, after reading the assignment, the student tries to apply new ideas to the job he is trying to learn. In class, you guide his learning, you ask questions, and you pose problems which require him to apply the ideas he has studied. You hear what he says and observe the techniques and skills he uses in coping with problems. You guide him with suggestions when you think he is going in the wrong direction. As he and the other students discuss what they would do in a given situation, two things are being accomplished; one, the students are learning through practice and are applying principles to hypothetical situations, and two, you are observing their mistakes and omissions and are giving them corrective guidance. By stimulating the student to apply his ideas in solving problems and by guiding his activities, you are helping him develop comprehension of the subject. Under these conditions the student is learning.)

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"After my golf instructor had felt that I had made progress he suggested that I stop my regular lessons but continue to practice. He also asked me to come back occasionally for some practice under his supervision to insure that I did not drift back to my old errors."

From the golf example you can see that the student plays the more prominent role in learning. Few people are entirely self-taught. Guidance is needed to help the student discover his weaknesses. As an instructor of relatively complex skills you must do a lot more than the golf instructor. You must show the student clearly what is to be learned and why; you must tell him what to study; you must show him just what he should learn from what he has studied. He must create situations in which he will apply what he has studied and you must encourage him to practice.

You, as the instructor, can design problems, weigh facts, organize material, and tell the student about these activities, but this action on your part teaches you, not the student. If you are to help the student to learn, he himself must study, apply, reason, and practice.

Your instruction will not help the student learn unless it stimulates and guides his activity. Your activity should make him think, solve problems, and answer questions. You should challenge and inspire him to attack problems, correct him if he is wrong, and direct him to the desired objectives.

A good learning situation is so arranged that students become emotionally involved in the material to be learned. Such emotional involvement means that students care about the outcome of learning or that they are at least mildly satisfied or dissatisfied as the learning situation develops. As a rule of thumb it can be said that retention of what is learned is aided when the learner has experiences which definitely affect his emotions.

There is a fable about a man who went to get some water and took a sieve in which to carry it. Someone had to correct the method of carrying the water, perhaps by lining the sieve with clay, before the task could be accomplished. As unbelievable as it may seem, many instructors "carry water in a sieve." They apparently do not consider that the subject matter which they have to teach can best be delivered in a particular kind of "container." The method of instruction is the "container"--the procedure the instructor uses to impart the subject matter to his students.

Before we discuss the methods of instruction and how, why, and when to use each, we must consider what we are required to teach.

In general, we teach knowledge, skills, and attitudes. We teach our students to perform mental operations, to absorb theory, principles, and facts from which they will select the appropriate principle, fact, or bit of knowledge to apply to a given situation. We teach skills to help a student learn to perform successfully in his assignment.

However, for purposes of explanation we cannot draw a clear line between knowledge and skills. One would rarely teach a skill which has no knowledge attached, or knowledge which is not applicable to performance. This means that knowledge and skills normally are taught in the same lesson although one or the other may dominate. Consequently, when selecting a method of teaching, the instructor does not choose a method for a complete lesson; rather, he selects methods which will be most effective for the various parts of the lesson. He may have to develop an interest in a subject (an attitude) first, then he may present the basic principles (the knowledge) on which the operations (the skills) are based. In this kind of situation the instructor would use a number of methods.

The first consideration in selecting methods is the type of material to be taught. Others are the objectives of the instruction, the ability and personality of the instructor, the availability of material, and consideration and implementation of the principles of learning.

It has been shown that one learns by receiving stimuli through the various senses. The more senses that are employed the easier and better is the learning. From your knowledge of instruction you can soon draw the conclusion that the method you use to put across a particular lesson should use as many of the senses as possible and should make the instruction as vivid as possible.

Because each instructor's personality is different, his knowledge is different and his facility with words is different. An instructor will do well to be natural and develop a style that is effective for himself. It is possible for someone who has a good command of words

to explain things very clearly with words only. An instructor who does not talk well will do better if he uses pictures or real objects in addition to speech practice for self-improvement. One method of instruction may require mostly words while another may require a piece of equipment for each student. Briefly, be natural; select and use those methods which are most effective for you and work toward improving your shortcomings so that you may use other methods.

If the objective of a lesson is to develop a skill the instruction obviously should require a method in which the student is allowed to perform to learn that skill. If the equipment or material with which he is to work is not available, some other method must be selected, although the instruction will probably not be very satisfactory.

In summary, it may be said that there is no one best method of instruction, nor is any lesson taught wholly by one method. In each session you should modify your presentation to fit the circumstance, working constantly to use those methods which will do the best possible job.

Obviously we cannot describe all the techniques of instruction so we have chosen the ones which seem to be most applicable to our specialized training. We strongly suggest that you consult other instructors who have had experience or staff members of your school about the methods of instruction that they have found appropriate to your subject matter. We also strongly suggest that you refer to some of the texts listed in the bibliography. Many have proved their practical value to other instructors.

#### B. DISCUSSION TECHNIQUES

The discussion method of teaching involves oral questioning by the instructor, participation by the students, and guidance through a summary by the instructor. This method is applicable to almost every subject that is taught, and usually is a definite part of every lesson plan. Some basic ideas on the use of questions can be set forth as guides; however skillful use comes only with practice.

The leading advantages of the discussion method are that it forces the students to think and it tends to produce a socialized classroom rather than the rigid formality of the lecture method. It has, however, additional advantages over the lecture in that students participate actively and the instructor gives attention to individual student's questions or answers. The discussion method enables the instructor to determine how much the student has learned, the points that need clarification, and the effectiveness of his teaching.

Questioning is often referred to as an art. Fortunately, it is one in which the intelligent and diligent instructor can achieve much rewarding success. Good questions lead to deeper insight and better understanding not only on the part of those who answer them but also on the part of those who construct them.

If questions are to serve their educative purpose they should be planned carefully. They are effective since:

they excite and hold attention and interest

they establish two-way contact between the instructor and the student

they serve to focus attention on the main points of the subject matter

they stimulate the student to use facts and basic principles in analyzing his problems they help the instructor to ascertain the student's progress in gaining knowledge and understanding

You, the instructor, should remember at all times that all questions must contribute to the learning process. You can improve techniques in formulating questions by using some of the following suggestions:

Phrase questions clearly and use words that are understood by the learner.

Ask definite questions that are limited to one main thought and are precise in meaning. It should be unnecessary to have to explain questions.

Ask questions that are thought provoking. Avoid questions that can be answered by "yes" or "no" and questions that are so phrased that they give a clue to the answer.

Ask questions that coordinate knowledge. Good questions can help the student to see relationships between units, lessons, or subjects. They serve to organize and evaluate his learning.

Allow only one student to answer at one time; do not allow simultaneous answers by several students.

Avoid calling on students in rotation or in alphabetical order. Cover or sample as many students as possible.

Identify the student to answer the question by name and <u>after</u> asking the question thus requiring all in the class to consider an answer to your question.

If at all possible, fit the question to a student.

Certain key words used in questions tend to guide the question in the most significant form Generally, questions asking who, what, where when, and how are most effective. A few other suggested words and their characteristics are:

explain: requires the student to amplify and illustrate the subject

outline: requires the listing of key points in logical order

<u>define</u>: requires an accurate description of the limits of a subject

compare: requires the identification of similarities and differences

illustrate: requires the student to give examples of the principles or facts

calls for a step-by-step description of the growth or development of a process, such as the flow of electrical current, gases, or liquids

a process, such as the from or electrical current, gases, or inquire

Other words similar to these may be used very effectively in the classroom and the instructor can gain an appreciation of these only through additional practice.

Discussion responsibility extends beyond formulating and asking questions. As the instructor, you can follow through by:

requiring that replies are given loudly so that all may hear requiring clear and effective expression

ensuring that any misconceptions revealed by wrong answers are corrected helping the students learn to challenge the viewpoints of others without showing anger or arousing antagonism

commending a discussion that is good or outstanding.

It is difficult to suggest means of evaluating the questioning technique since such evaluation is an integral part of the technique itself. As an instructor, however, you will soon feel the degree of success of this technique. One question will stimulate spirited class discussion. Questions will flow naturally and logically in the development of your subject. Questions will not appear forced. Your questions will involve all the students rather than allow a few to monopolize the class discussion. Students will enter into the discussion by asking many of their own questions. And you will be able to keep the class discussion on the subject rather than allow it to wander to non-related areas.

There are several types of group discussion used extensively in our Organization. They are:

1. Class Discussion or Directed Discussion. In this technique the instructor is normally the leader. He can, of course, appoint a student to conduct the class discussion at certain phases. The leader outlines the general subject area to be considered and the goals or objectives to be covered. All students participate inua class discussion and it is not only the instructor's responsibility for its success but also the student's. The instructor must keep

the discussion on target and must make frequent summaries. Students, however, may be called upon to summarize certain phases of the discussion. The student's contributions are sought in terms of the application of facts, concepts, skills or principles rather than as mere recitation of principles. The students are expected to have at least a fair-to-good background in the subject in order to participate intelligently in the development of the material.

An example of a subject for a class discussion might be:

"As a supervisor, what courses of action are recommended in handling an employee who is frequently late to work?"

2. Conference Method. This technique of group discussion is not normally used as a teaching method except in certain courses which have an objective of developing the skill of conducting or participating in a conference. In this type of discussion the group seeks to arrive at a mutual solution to a problem or to establish conclusions on an issue through expressions of opinion and attitudes, the examination of relative facts, and through a harmonizing of understandings. The instructor or leader exercises control over the discussion in accordance with the objectives of the conference and by having a plan for proceeding to a group conclusion. The participants are expected to be prepared with pertinent facts, logical opinions, evaluation of judgment, and suggestions for the solutions to the problem of issue. The conference are normally well qualified in the subject and the decisions arrived at by the group are expected to be final to the point of being able to be implemented.

A sample subject of a conference might be:

"What are the best means of evaluating students in the Air Operations course?"

3. Panel Discussion. Characteristic of this type of discussion is the examination of an issue or subject in front of a group or class by several qualified persons who represent the major viewpoints or who present various aspects of a subject. The purpose of a panel discussion is to develop the principal problems or topics to be discussed later with the student body. Each panel member, in turn, presents his thinking and ideas relative to the subject. The leader or instructor establishes the general pattern for further thinking and discussion by the students as a result of presentations by the panel. Later he brings the student body into the discussion. Predetermined conclusions or mutual opinions are not sought necessarily although a summary is presented when a pattern of discussion has been developed adequately. The nature of this type of discussion requires a relatively high degree of knowledge and understanding of main topics on the part of the students. Consequently a panel discussion is used frequently to terminate broad phases of instruction with the purpose of emphasizing major problems which will confront the students. The students are expected to participate in the latter phases of the panel discussion by raising questions and making contributions of their own.

An example of a subject for panel consideration might be:

"What are the advantages and disadvantages of certain selected evaluation procedures, such as: performance testing, objective tests, subjective tests, and the like?"

Each may also talk on one of the stated sub-topics of the main subject.

4. The Seminar. In many of our courses "seminars" are planned for what are, in fact, actually class discussions. The seminar is a "clearing house" type of instruction where those engaged in individual studies may present their problems, difficulties, and findings in order to get the benefit of constructive criticism and advice of a group. The emphasis in presentation shifts from a problem presented by the instructor to that of individual problems presented by a student. Each student looks to the instructor and other members of the group for help.

Inherently this technique should be used only at the advanced-instruction level. The initial guidance given by the instructor consists of assisting the student to outline his problem and devise a plan for a solution. In a seminar the instructor directs the attention of the group to the general principles and problems that must be considered as each student progresses with his plan. Frequently the instructor will summarize for a student the group's opinion on his problem. Action or any final conclusions, however, are to be those of the individual student. Participation in a seminar is highly individual, with initiative for planning, research, and reporting resting with the student.

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A subject that could be used well in a seminar is "Evaluation Techniques in Instruction." Each student could have a problem related to the general subject:

How to increase the reliability of my tests in Financial Procedures Course
How to make my performance testing more practical and realistic
Are objective tests the best device for evaluating student achievement in Budget and
Fiscal Courses?

The true seminar is a basis for group discussion and its objective and purpose are quite different from the class discussion, the guided discussion, or a review discussion. Since the seminar meets after each member has done considerable individual research on a problem, this method of instruction is not applicable generally throughout courses of training in the Agency. Consequently, your course schedules should reflect "Class discussion," etc. rather than a "Seminar on...."

- 5. <u>General Questioning Suggestions</u>. The following list outlines some uses and techniques of questions and common classroom situations with suggestions for handling them. Perhaps some of these will be helpful in your conduct of class discussions.
  - (a) To call attention to a point that has not been considered:
    What has been your thinking about this part of the problem?
  - (b) To ask how strong an argument is: How much importance do you think we should attach to this statement?
  - (c) To get back to causes:
    Why does Mr. X oppose this measure?
  - (d) To call attention to the source of information or argument: Where did this information originate? Who is the Mr. X that was quoted awhile ago? What opportunity did Mr. X have to know about the subject?
  - (e) To suggest that the discussion is wandering from the point:

    Just what point are we now considering?
  - (f) To suggest that all available information on a point has been given: What information can you give us on this point in addition to what has already been given?
  - (g) To call attention to unsuspected difficulties or complexities in the problem: How much more complex is the problem than we had at first supposed? How does this help us to understand why supervisors find it so hard to solve this problem?
  - (h) To register steps of agreement: To what extent do we agree on the point?

- (i) To call attention to points of disagreement: On which points in this discussion do we disagree?
- (j) To suggest that the group is not ready to take action: How do you feel about thinking this matter over and reconsidering it at our next meeting?
- (k) To suggest that nothing will be gained by further delay: After all, what new information or ideas can we hope to get? What is to be gained by further delay?
- (1) To suggest that personalities should be avoided:

  How much more important is the solution of the problem than the people involved?
- (m) To suggest that some people are talking too much: How can we give more people a chance to speak in these discussions?
- (n) To suggest that each opposing group might well come part way in arriving at a course of action: Where, between these two points of view, does the best course of action lie?
- (o) To suggest that the group may be prejudiced:
  How is our own interest in the outcome causing us to overlook the interest of other groups of supervisors?
- (p) To bring out an idea that has not been covered: Have you considered this idea?

#### Situation

# Suggestions

- 1. Handling touchy subjects.
- Great tact and diplomacy must be used. Try to anticipate the controversial topics that may come up and think through a plan for handling them. Avoid them if possible but face them squarely if they are brought up in class.
- 2. Establishing and holding the interest of the group.
- Avoid individual problems. Use visual aids. Use case studies and plan situations. Change the approach to the subject. Keep things moving.
- 3. Starting a discussion when necessary.
- Take an opposite viewpoint. Use real or hypothetical cases. Tell a story. Ask a direct question. Call for experiences, ideas, or opinions from students.
- Handling a request for information which is considered "confidential" or "privileged."
- Use real or hypothetical cases involving the same principles. Use good judgment and tact but refuse to be the source of such information.

5. To build up the discussion.

- (a) Cite specific cases that provoke discussion.
- (b) Secure special cases from the students.
- (c) Phrase questions to imply a negative view-point.
- (d) Encourage some member of the group to take issue with general trends or previous statements.

6. Preventing sidetracking.

- (a) Summarize frequently.
- (b) Restate the problem orally.

#### Situation

#### Suggestions

- (c) Question students concerning additional phases of the problem.
- (d) Question the class as to what this discussion has to do with the problem under consideration.
- (e) Tell a suitable story.
- (f) Head off the rambler by securing a statement from a level-headed thinker.
- (g) Ask individuals to postpone side issues until the discussion of the specific problem has been completed.
- 7. Preventing side discussions between two or more members.
- (a) Direct a question to a member of the group involved.
- (b) Ask students who are participating in side discussions to contribute their ideas for the benefit of the class.
- (c) Stop and call attention of the entire class to the side discussions.

#### C. DEMONSTRATIONS

The demonstration is a means actually to show and teach certain skills. A skill is a combination of both mental and physical activity. When skills are to be taught a demonstration is a requirement. To be most effective the instructor should require the student to apply the demonstrated principles or procedures as soon after the demonstration as possible. For example, at the rifle range the instructor demonstrates the operation of a carbine, how to load and unload the ammunition, how to sight the target, how to squeeze the trigger, and how to fire from various positions. After this demonstration, students should practice these procedures to become proficient marksmen.

Several major advantages of the demonstration are:

- 1. it appeals to several senses
- 2. it favors "seeing" versus "perceiving"
- 3. it is usually done with a small instructor-student ratio, which ensures more individual attention
- 4. the degree of student performance relates to instructional effectiveness

Some disadvantages of the demonstration are:

- large classes cannot be taught effectively by one instructor because all students may not be able to clearly see the action (closed circuit TV may remedy this limitation)
- 2. equipment is sometimes unavailable
- 3. nearly ideal instructional conditions must be obtained
- 4. it can be time-consuming

A short demonstration is usually more effective than a long or complex one. If the demonstration is too long the students may lose interest or may become impatient and bored. If you have to stage a complex demonstration, divide it into several short phases. Presenting too many ideas in too short a time will yield far less in retention than will the recommended procedure of several short demonstrations.

In preparing for a demonstration, determine the specific objectives of your instruction. Accordingly, list each step of the demonstration in its proper sequence, remove all possible distractions, assemble, and arrange all materials before the class starts. Rehearse the procedure so that your presentation will flow naturally and easily. Before beginning the demonstration, briefly explain its purpose and objectives.

If it is a complex demonstration present it at a normal pace, then repeat the process more slowly. In all demonstrations relate the material to previous and future lessons. If necessary use visual aids to clarify important points. Be certain the students can see and hear you clearly. Face the students and speak directly to them. Encourage students to ask questions during any phase of the demonstration. Ask questions during the demonstration to check on students' understanding.

A final demonstration should cover the entire operation. An example of an effective demonstration procedure is given in OTR's Instructor Training Course in which the first stage deals with techniques and skill of speaking, the second, with organizing and delivering a lecture, and the third deals with classroom discussion or conference procedures. All phases are progressively related and each includes application of material from the preceding phases.

It is usually a very poor procedure to pass one item of equipment among the students for their examination during the demonstration. Students often find it difficult to listen to the instruction while examining the item. Furthermore, an item which is passed from student to student will distract other members of the class and by the time it reaches the last student, much of what was intended to be learned by the personal or individual review is lost.

Summarize the key points after completion of the demonstration. Encourage the students to ask questions, and, more important, direct questions related to the key points. For learning to take place it is necessary that the students practice application of what they have observed as soon after the demonstration as possible. At this point, you must carefully check student progress through the phases of the demonstration.

An effective method of conducting a demonstration is outlined in four stages:

- 1. The <u>instructor performs</u> each step carefully and accurately, stating what he is doing, why, and how. In this stage, sequence and correctness of presentation are important.
- 2. The instructor repeats the performance, but this time the student tells the instructor what to do, how, and why. In this stage the student is not responsible for performing the steps and consequently can concentrate on the correct procedure. The instructor, of course, asks questions to determine the student's degree of understanding.
- 3. The student tells in advance what and how, and then does it under supervision. In this stage do not hurry the student, do not lose patience, and do not take the work away from him, because early success is necessary to good learning. Point out correct actions rather than dwell on mistakes. If the student is hesitant about a procedure stop him, ask questions, and review that part giving him difficulty.
- 4. The <u>student practices</u> under the supervision of the instructor. Often in the fourth step, the instructor may use highly proficient students as assistants to help other students who are having difficulty. In this stage the student works first for accuracy of movement and procedure, then for speed. The instructor looks for incorrect practices which may become bad habit. During this practice consider the distribution of practice and the effects of fatigue and monotony so that you can stop the practice session before these effects become apparent.

In determining the effectiveness of a demonstration, the instructor may resort to several procedures. For example, frequent questioning of the student to determine his knowledge of the key points, new terms, or dangers of omissions, indicates the student's grasp of the demonstration. The instructor may also resort to an objective written test which contains questions on principles, procedures, vocabulary, safeties, effects of shortcuts, or dangers. Obviously, the best test of the success of the learning is the ability of the student to conduct the demonstration and to understand the reasons for certain steps at certain sequences in the complete operation.

Also, as a part of the final stage of any demonstration, the instructor may move among the students to observe their actions and to lend assistance to those who need additional instruction. When a number of students have missed fundamental points, the instructor must explain them again and repeat that element of the demonstration. If only a few students require further assistance in learning, the instructor must give it to them while the class work progresses. After the students have had an opportunity for practice, the instructor should raise the standard of performance and vary the situations to which the skills are applied.

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#### D. PRACTICAL EXERCISES

Exercises follow naturally from the principle that learning is an active process. The student becomes more personally involved in an exercise than in lectures or discussions, so his retention increases. There are all kinds of exercises and the term is used to cover everything from short written problem-solving tasks to full-fledged field problems. Practical work should be encouraged wherever possible since this is usually an objective of our training and also since the principles of learning are most effectively implemented by this type of instruction. In the construction of any practical exercises the following considerations should be taken into account:

1. Plan and coordinate the exercise. Consult reference material or other personnel experienced in this technique of teaching in order to acquire a broader knowledge of the many details and hints in planning such exercises. We have included a sample outline as a guide to your planning.

#### Title: BIOGRAPHIC INFORMATION EXERCISE

#### Student Briefing

#### I. Purpose

The purposes of this exercise are:

- A. To provide you practice in collecting detailed information on a specific period in a person's life through means of interviewing.
- B. To provide you practice in writing a well-organized report stating the facts as developed through the interview.

#### II. Situation

- A. In reviewing the subject's personnel file, there is a lack of checkable leads covering the last two years of college life. Subject (to be played by staff member) is to be re-interviewed specifically on this period of his life, and further information on him is required to augment the file. Especially desired are leads to other sources such as names of associates, teachers, advisors, etc., who might be able to verify subject's statements concerning himself.
- B. Subject is to be completely cooperative.

#### III. Requirement

A. You are to interview your subject for information on his junior and senior years in college. If this particular period was broken (e.g., intervening military service or other reasons), you will concern yourself only with those years devoted to college or university education.

OR

If your subject did not attend any college or university you will interrogate him on the period from his twentieth to his twenty-second birthday.

B. At the completion of the interrogation you will write a detailed report of the information you have acquired.

#### IV. Special Instructions

A guide (by no means all-inclusive) is attached. This checklist is to assist you in developing areas which might prove of interest to the subject. Bear in mind that it is the person you will interview in whom we are interested. The interview should not be conducted with the intent of completing the checklist item by item, but should be conducted in the manner of an open-end conversation in which you have these various elements in mind to elicit during the interview.

#### Checklist

#### 1. GENERAL INFORMATION

- a. Subject's Name
- b. Place of Birth
- c. Name and Location of College or University
- d. Dates Attended
- e. Factors Which Determined Subject's Choice of College or University

#### 2. SCHOLASTIC INFORMATION

- a. Courses Studied; Names of Instructors
- b. Factors determining subject's choice of courses
- c. Grades received and standing in class
- d. Likes and dislikes (courses and instructors)
- e. Influence exerted by individual instructors
- f. Honors

#### 3. EXTRACURRICULAR ACTIVITIES

- a. Interests in On-Campus Activities
  - (1) Extent of participation
  - (2) Personalities (leading on campus or in his particular life)
  - (3) Close associates

#### b. Types

- (1) Cultural (debate, journalism, dramatics, etc.)
- (2) Athletics (intercollegiate, intramural, etc.)
- (3) Social (class, fraternity, honorary societies, etc.)
- (4) Politics (with identification of factions and their platforms)

#### 4. OFF-CAMPUS ACTIVITIES

- a. Extent of participation
- b. Personalities
- c. Close associates

#### 5. FINANCES

- a. Scholarships, athletic or other
- b. Financial support by parents or other
- c. G. I. status
- d. Jobs held; supervisors or employers; salary
- e. Comparison of subject's financial status to that of classmates

#### 6. LIVING ARRANGEMENTS (ESPECIALLY CLOSE ASSOCIATES)

- a. Dining
- b. Rooming
- 7. STUDY HABITS AND FACILITIES
- 8. EXTRACURRICULAR READING HABITS
- 9. MARITAL STATUS DURING ONE OR BOTH YEARS
- 10. GENERAL HEALTH, AND RELATIONSHIP OF HEALTH TO PERFORMANCE

#### V. Suggested Format for Reporting Interview

(In this section, the instructor lists all the details which should be considered in the interview and included in the student's report.)

#### VI. Student's Review of Report

When returned to the interviewer, this paper should assist him in determining the completeness and accuracy of his report. For the benefit of the student's knowing the accuracy and completeness of his exercise:

- a. List any items of information which the student did not report.
- b. List any items of information reported which were not given to him.
- c. List any items of information which he reported incorrectly.
- d. List any important items that could have been given which he did not request.

#### VII. Instructor-Observer Comment

This should stress student's strengths and weaknesses observed, especially the latter. Use specific examples gleaned from the points covered in the attached sheet; e.g., "Asked straightforward, clearly phrased questions"; "Gave impression of sincere interest in person and his story"; "Introduced undue pressure or stress on information out of context with area under discussion"; "Lost control of the interview because of (give specific reasons)"; "Obviously had no clear plan to follow and allowed the discussion to take whatever course prevailed."

Should you feel that tenseness or an indication of being somewhat under stress tended to detract from the student's overall performance, state this in the SUMMARY COMMENT.

#### SUMMARY COMMENT:

#### VIII. High Points Brought Out in Instruction

NOTE: There are listed below some of the high points (negative and positive) brought out during the instruction periods in the Interviewing block. It is suggested that these areas be used as a guide in rating the overall effectiveness of the student in accomplishing the job.

#### **NEGATIVE:**

- a. Framed questions for "Yes" or "No" answer when he should have asked for narrative or explanatory answer.
- b. Asked inappropriate leading questions which indicated to the subject the answer the interrogator wanted.
- c. Jumped to conclusions.
- d. Asked more than one question at a time.

#### POSITIVE:

- e. Followed up leads.
- f. Dug for details.
- g. Checked on names, dates, spellings, etc.
- h. Rephrased questions if there was any indication of misunderstanding.
- i. Maintained control of interview; did not let subject wander.
- j. Proceeded systematically.
- k. Recapitulated when appropriate.
- 1. Paced interview to secure maximum information in time allowed.
- 2. Be sure that you and your students know the purpose of the exercise and that the knowledge or skill to be practiced is really important and germane to the objective.
- 3. Prepare the students fully for the exercise. Be sure they have as much information as you think is needed and that they understand the purpose and procedures to be followed. In some cases written directions are advisable.
- 4. Give the students time to prepare. If exercises <u>are</u> scheduled in a course they are worth announcement long in advance so that the students can relate the course material in terms of practical use.
- 5. Determine the progress of each student. Make him write answers to questions or prepare a planning paper, or observe him in action. In some instances, team activities in planning and accomplishing exercises are very effective. Whatever, get some indication as to just how well he is doing. You want to know the worth of the exercise and, more important, the student wants to know the degree of his learning.
- 6. Be sure to allow ample time for a critique. Again, each student, even as a team member, should know exactly how well he did. If it is a team exercise, the functioning of the team should be critiqued as well as the efforts of the members. If the exercises consisted simply of answering questions, then the critique may be only an indicator as to the correctness or incorrectness of the answers. A more complex exercise may well demand an individual critique session. A practical exercise is only as good as the value the student receives from a comparison of his performance with some accepted standard of performance. It is usually a good technique to prepare some sort of simple checklist against which to rate each student's performance. This is particularly desirable when more than one instructor is used in the overall rating.

#### E. PROBLEM SOLVING

Problem solving is a teaching method which guides the student through a reasoning process necessary to the solution of a (training) situation. The problems so used are of the most value when they create "real" or "live" problems similar to those likely to confront the student. To the degree that it teaches proper habits of analysis and thinking, the problem solving technique surpasses most other methods of instruction.

Although this method of instruction is outlined here for use as a separate technique for one unit of instruction, it may be used in conjunction with other methods. Whenever this technique is to be used effectively, the requisites of preparation, conduct, and critique apply.

Its disadvantages are frequently found in the difficulty in preparation, requirements for equipment, instructors, space, and the lack of adequate, positive operational histories. Problem solving, however, may be adapted easily to both the academic (classroom) or the practical (field) situation.

A general outline of using the problem method is suggested:

1. Stating the problem. The instructor's responsibility is to create logical and practical problems built on anticipated "felt needs" or real difficulties to be encountered by the students. The problem must be defined clearly for the student or he must be assisted in localizing it so that he will acquire the technique of analyzing situations which confront him.

- 2. Suggestions for possible solution. In this step the student or student groups, independently or under the direction of the instructor, construct hypotheses. If the training problem is constructed properly the proposed solutions will come from the subject matter, skills, and techniques which were taught previously. The instructor guides the student's thinking and activity principally by suggestion.
- 3. Testing the hypothesis. In this phase the work of the student is observed by the instructor for evidences that the student is finding and examining all factors and their relationships which influence each hypothesis, and that he is planning to apply the principles which have been taught. The instructor must keep the student from getting too far afield so that desired learning will be achieved.
- 4. Evaluating the conclusion. The completion of the problem affords the instructor an opportunity to review with his students the success and failure of their solutions, the reasons for their actions, and the effectiveness of the problem-solving technique which they applied.

Specific considerations required in the preparation of a problem:

- 1. Establishing the objectives or goals. Problem solving is an excellent tool for integrating techniques and other instruction which have been presented in an unrelated way. This applies especially to instruction involving coordinated individual or group actions such as tactical exercises and plans, and where evaluation of individual capacities for judgment and leadership is required. In initiating the planning of these problems the instructor must be very precise in establishing the objectives of the problem and in defining them clearly. For example, an objective might be to teach a small unit how to plan and ambush a motor convoy or to teach the student the importance of establishing emergency communications. It should follow that the problem presented is real, that is, the framework and detail of the problem must relate only to the stated objectives and not involve extraneous techniques, knowledge, or skills which are unknown to the students.
- 2. Analyzing the field situation. Having established the objectives of the problem to be presented, the instructor and class must list all the factors and requirements of that problem which would likely be present in a real situation. This is the research step. What do case histories show to be the usual elements of the operational situation which is to be duplicated under training conditions? Of these basic factors, which ones are variables because of local (specific area) differences? Once these factors have been determined and examined they should be arranged in the order and relationship they are most likely to have with each other. A simple listing of the major points will require the application of the basic principles, skills, and techniques which you want to teach through the problem.
- 3. Determining the training situation. The next step is to balance the capabilities of the training conditions with the requirements which the use of the problem will demand. Essentially this comparison will be made on three basic points:
  - (a) Extent of realism required.

The greater the degree of realism achieved by the instructional situation, the more effective is the instruction. Even the more sophisticated student is affected by attempts at realism.

(b) Physical capabilities and time limitations.

In the ambush problem mentioned previously, certain details could not be "real" and had to be duplicated to an extent determined by the capabilities of the training area as to equipment, terrain, personnel, and time. In part, they were:

- (1) Size, armament, personnel, route, and time of travel of enemy convoy.
- (2) Personnel available for the ambush force.
- (3) Weapons and demolitions available.
- (4) Tactical situation.

The method of handling each of these factors in the training situation will vary from all factors being assumed in a safehouse problem to complete duplication of them on a field training site. Given assumptions in the problem, all the equipment, time, and terrain necessary, plus designating certain map areas for the location of the ambush, will confine the student to selecting the site, planning and executing the physical details of the ambush and withdrawing from the area. These constitute the major objectives of the problem.

(c) State of training of students.

The operational situation chosen by the instructor may require the student to accomplish tasks not yet mastered or not relating directly to the principal skills or techniques to be taught. Obviously, if it is clear at this point that the students do not have sufficient training or mastery of the principal concepts and skills, the problem cannot be utilized. All incidents which encumber the student or lend little to achieving the teaching objectives should be set aside and the student should be relieved of the responsibilities for them. This is done by providing the incidents as facts in the situation or by assuming the students' capability in the incidents. For example, for a given locale, the student of the ambush problem may not know what specific kinds of weapons would be available for his ambush plan. The instructor gives him a warehouse list from which he may select the appropriate weapons—the selection of proper weapons being one of the problem's objectives.

4. Conduct of the problem. The problem itself and the conduct of the problem may be considered from these several sub-topics:

The initial situation establishes a setting within which or from which the problem will proceed in its development. The student must understand the situation clearly and where he, his group or team is to start. This explanation, which establishes the characterizations and attitudes of the students and instructors, is built by the use of briefing sheets, motion pictures, still pictures, and verbal presentations which describe the general and specific situations to be confronted by the student. The scope and depth of these materials vary according to the training problem and to the extent that realism and characterization are desired. The specific situation confronting the student should leave no doubt as to the requirements for action that are placed on him.

The control of the problem as it progresses is maintained by the carefully designed initial staging and by the framework of the problem as it develops. The instructor must anticipate all the situations to be met by the students—the materials, activities, skills, and understandings demanded, and all the possible alternatives that might be chosen. Here again there must be a review of all possible influences and actions with relation to the teaching objectives of the lesson. New elements may be introduced into the initial specific situation as the student progresses or fails to progress, or as might logically be expected to develop in a field situation. The instructor may find it necessary to provide the student or group with an acceptable solution of the problem through that phase so that the student can analyze his errors or poor judgments. In this manner the student will appreciate the value of the instruction (if he did not complete successfully) and will also be prepared to meet later phases of the problem.

5. Evaluating the student's achievement. Testing and evaluating the student and his performance demand that the instructor establish clearly for each phase of the problem and the problem as a whole that which he expects in terms of the application of the principles and the personal qualities to be shown by the students. Problem solving is, perhaps, the best instructional method for evaluating performances, as it requires more from the student than proficiencies in specific subject-matter and skills. It demands the integration of all special abilities, the exercise of reasoning and judgment, and the display of some intangible personal factors including initiative, leadership, and imagination.

Students may be required to solve the problems, either orally, in writing, or by performance in other ways. This will depend on the objectives of the problem, the type of problem (classroom or field), training facilities and other factors. In general, these methods of organization can be used:

- (a) Individual solution
- (b) Group or team solution, which may be
- (1) by committees in which the entire group works on the same requirements and solution, or
- (2) by each student working or performing the requirement, part of a requirement, or team-member duty, assigned him by a team leader.

Individual solutions are appropriate where it is imperative to evaluate each individual's performance and judgment in all aspects of the problem. Group or team solutions are appropriate when the individual is expected to master any of the tasks that may be assigned him or where qualities of leadership are to be observed.

To accurately score what is observed, the instructor must establish standards of performance and must devise rapid means of recording accomplishment. Checklists and notations should be used to secure accurate observations which can be discussed later with the student.

6. Critique of the problem. The critique of the problem is a necessary instructional tool. It is the instructor's final opportunity to insure that the principles taught in the problem are understood by all students. Whatever method is used to conduct the final critique, there should be recall of the original framework and situation in the problem, analyze the "whys" and "hows" of performances in terms of the principles which were to be applied, and explain them in detail against the possible solutions to the problem and the level of achievement that was required by the instructor. All possible solutions of the problem or any of its phases should be covered and evaluated.

The final critique may be conducted in several ways. If only one, or a very few students, are concerned, each solution should be examined critically. If it is a group, whether its members executed the problem requirements individually or as a group, several methods of handling the critique are available to the instructor. As a general principle, as many solutions as possible should be presented and reviewed. Since it is frequently impossible for each student or group to present a complete solution, maximum participation by the class can be achieved by any one or combination of these methods:

- (a) Present one complete solution and without comment present another which is also complete. Instructor then requires these two who presented them to indicate the reasons for possible differences.
- (b) Same as a, but other groups or individuals comment on points of difference.
- (c) Same as a, but a third group or individual analyzes the two solutions in terms of his own solution.
- (d) Present only one complete solution and require other groups or individuals to indicate only those points in which their solutions differ from the one presented.
- (e) When the solution or action conveniently divides into component parts, it can be discussed step-by-step. A different individual or group is called upon to present each part. The instructor moderates each in accordance with any of the previously stated methods. Care must be taken to establish correctly and clearly, the analysis of each part before proceeding to the next.

When and where to hold the critique sometimes presents a difficult decision to the instructor. It generally should be soon enough after the completion of the problem so that "feedback" is as immediate as possible. You must also consider the factor of fatigue, particularly after a field problem exercise. You should allow yourself and the students ample time for preparation of the critique. It is wise to inform the students at the beginning of the problem that a critique will be conducted and to give them suggestions as to what they will be held responsible for. Re-using one or more training aids is frequently effective in conducting your critique.

#### F. ROLE-PLAYING SITUATIONS

We use the term "role playing" in a rather general sense. We are referring to those instructional situations in which a student is required to behave under a certain set of circumstances, or as he imagines another individual to behave (or think) under a same set of circumstances. One student, for example, might play the role of an African diplomat discussing United States racial problems while another student might discuss this situation from the point of view of an official of the United States. In this instance, each individual is playing a role. The first differs from reality, the second only in the sense that the student must imagine a situation which he has not yet faced but might be required to in his future job assignment.

There is considerable evidence to show that a student gets some meaningful insights into the feelings and outlooks through this play-acting which cannot be taught in any other manner. These situations can be useful to give practice in handling situations and to force students to think problems through from another's point of view in order to better understand that point of view.

Role playing can range from situations which require written responses to those which are full-fledged practical exercises. All are usually intrinsically interesting; they add variety to teaching and, most important, they can change attitudes, increase appreciation of another's problems and give practice in the handling of personal situations. There are many courses which lend themselves to this technique in teaching realism.

In preparing for a role-playing exercise the instructor usually prepares a set of brief instructions for each participant in which he describes the situation and indicates the mental attitude or direction of thinking that each student should take, particularly if a controversial issue is being considered. This assures that all conditions, issues, or main ideas which the instructor desires to be considered are known and can be brought out in the exercise. Only general directions are given so that each participant can project himself and his attitude of the role into the exercise.

While the participants are isolated and are reading the instructions and preparing for their roles, the instructor can discuss the trend of thought or action considered most desirable and acceptable. The class will then have some objectives as guides during the exercise and will be able to more critically evaluate the work of each participant. The evaluation or critique is a very important step in the use of this learning technique.

Role playing need not be as formally prepared as described above. Frequently during a class discussion where several students have taken opposing viewpoints, the instructor can interrupt the class session, direct several of the students to imagine themselves in a situation related to the discussion, appoint roles, and have the students "act out" their viewpoints. Sometimes training films present controversial situations at which time the instructor can interrupt the showing and organize a "play" after which he should show the remainder of the film so that students can know what actually occurred.

## G. THE LECTURE

The lecture is a method of instruction in which an instructor transmits information orally to his students. It is a method too frequently used in instruction. Much material which is spoken from the platform as a formal presentation could well be put in print and distributed to the class as a basis for directed or informal class discussion. There are, however, certain subjects and materials which lend themselves only to the lecture form of instruction.

The lecturer must not only know his subject well but also all peripheral material; that is, material which may be important in a question period or discussion which results from the formal presentation.

Assuming that you are using this technique, there are basic points which you should keep in mind in preparing material:

1. The presentation should be geared to a specific time, preferably a maximum of 30 to 50 minutes for one session. You should exercise great care in having no more material than you can cover adequately in that length of time. If a 50-minute period is to be spent in combination lecture and question period, you should be particularly careful in allotting an adequate amount of time for the question period.

- 2. You should place considerable emphasis on the use of stories or examples. These illustrations should take into consideration the interests and experience of the members of the class. Personal experiences are good if your purpose is to illustrate some part of the lecture and not to establish your bona fides as a lecturer. Nothing is flatter, however, than a story which is meaningless or badly presented.
- 3. The lecture may be planned as an integrated part of a block of instruction. It should be a logical extension of material which preceded it. It should anticipate material which follows. You must be careful, however, that you do not extensively repeat subject matter previously discussed and that you do not cover material which is included in a following lecture. The objectives or purpose of your lecture should be clearly stated at or near the beginning.
- 4. Questions or problem situations may be included in your lecture. In large classes you need not have the students actually answer or solve them. Instead, you, as a part of your lecture, would develop the answers and resultant solutions.
- 5. Another item in lecturing and teaching is the precise definition of important terms and words used. Your lecture should define key terms clearly and without unnecessary overlap, and you should always use these terms with exactly the same meaning. If you use the term "enemy capability" to mean performance which the enemy has already demonstrated can be done with ease (such as "Soviet capability to bomb Helsinki"), you will confuse the student who thinks of "enemy capability" as the absolute maximum level of performance that can be achieved (such as "Soviet capability to place a man on Mars").
- 6. Where possible you should plan to use training aids to assist in your lecture. As an aid to learning they should be constructed so that they will not detract from your presentation. An illustration might be so artistically and colorfully done that the class spends more time looking at the training aid than in listening to your lecture.
- 7. The lecture should be prepared with an <u>introduction</u>, presentation of <u>new material</u>, and a <u>summary</u>.
- (a) <u>The introduction</u> sets the stage for the presentation. It provides transition from previously presented materials to the new material which is to be presented. It establishes contact between the instructor and the class. It discloses the nature of the subject and gives the objectives of the instruction.
- (b) New material is the body of the lecture. It should emphasize a few new important points which are the bases of your instruction. Organization of the material will be determined mainly by the subject matter. It should be planned so that the student will first observe the subject as a complete whole and then the basic points as they relate to the whole.
- (c) The Summary should be brief, appropriate, and forceful. You must keep to the subject and finish with a review of the objective(s) of the lesson. A good summary always includes the asking of several questions to cover your key points. The sole use of, "Are there any questions?" is a poor technique to summarize your presentation. This question, however, is perfectly acceptable following your use of several questions covering the key points of your lecture.

Like other methods of teaching, lecture notes should be written to provide a record which either you or a substitute can study in preparation for a lecture. They should be in outline form, either topically or words or short phrases. It is a good instructional device to give your students a reproduced outline of your main lecture headings with space provided for note taking under each heading.

When you write a lecture or lesson notes, you may need to draw on a variety of source materials for information including interviews with specialists in the subject of your presentation. The assembly of the necessary information may be difficult because of certain peculiarities of our work; that is, the need-to-know principle and the compartmentation of activities. In addition, if you as the lecturer, are a supervisor of an activity, it is likely that you may not be familiar with all the details about an activity which you need to know to teach it effectively. If, on the other hand, you are a specialist in an activity, you may not have acquired the broader view of this activity and its relationship to other activities that you, as the supervisor, might have. Therefore, to obtain the necessary information to provide a complete view of the subject, you may have to draw on many types of sources and individuals.

#### H. SMALL GROUP INSTRUCTION

Frequently an instructor will desire to divide his class into small groups for particular consideration of the subject matter. Small groups vary in size dependent upon the classroom physical conditions available for division, type of activity to be accomplished by the small group, and instructional objectives to be accomplished. Normally the small group consists of from three or four or as many as eight to ten students.

Small group or class activity is characterized by the opportunity of free interchange of ideas among students and between students and instructors, the development of analytical thinking and reasoning, drawing out of the reticent student and requiring his participation, improvement of the student's skill in oral expression, his experience in working with others, and his evaluation of his own views in the course of making his own decisions.

There are a number of variations on the constitution and conduct of instruction in small groups. Normally the instructor will introduce the subject matter to the whole class and then develop it to a particular level. The instructor may then divide the class into appropriate small groups for more intensive investigation of the subject or for a solution to specified problems. Usually a student leader is designated for each of these groups. However, the group may elect its own leader, or a leader may develop as group discussion progresses. During the discussion period the instructor will circulate from group to group to lend advice or guidance. In reassembling the whole class, the instructor will require the leader of each small group to report the consensus (including minority opinions). The instructor will direct the class in a discussion and analysis of all opinions. By this technique each student feels that his opinion has been aired and considered in light of other opinions. NOTE: These types of groups have been known as "Buzz Sessions."

Another variation which merits mention is the technique of dividing the whole class into small groups (three or four) and having each group "role play" a given situation. Written assignments may be given to each group or assignments may be made orally to the entire class. In this case, the group meets for eight or ten minutes. Designated or appointed small group leaders report to the whole class on the conduct and results of their own role playing. The instructor, as before, conducts a discussion of the whole class on the pros and cons of the elements of the reports.

The instructor, instead of leading a discussion of the whole class, may request a small group to report the outcomes. He then can ask the class for critical analysis of each of the solutions or a comparison of the solutions or outcomes. In this manner no individual feelings are apt to be hurt since any solution or analysis represents the group's thinking.

It is suggested that you refer to other sections in this chapter for additional assistance in the conduct of small groups, using Discussion-Questioning Techniques, Problem Solving, Role Playing Situations, and Case Studies.

#### I. CASE STUDIES

Instruction is brightened and clarified by good illustrations of actual examples or operations. These are case studies and include brief examples selected to drive home a particular point covered in the course of a lecture or class discussion. They also extend to the lengthier "case histories" used to organize the study of a variety of operational actions. On occasion the collected documents of an entire actual operation have been reproduced, with only minor changes entered for security reasons. Although this approach affords the inexperienced student an appreciation of the actual step-by-step development of a case, it is normally not desirable because of the large amount of time expended by the student in assimilation of inconsequentials. Selective rewrites are almost always preferable, whether as a short vignette or an entire case.

When the case study is used for an analysis of operational principles, the student may be expected to examine the given elements of the operations for one of the following purposes:

- 1. To extract a set of operational principles.
- 2. To recognize the application or lack of application of operational principles.
- 3. To develop judgment concerning the operational principles which were applied, misused, or omitted.

Little learning will result from using a case study unless the objectives of its use are indicated clearly to the students initially, and unless frequent referral to the objectives is made as the major points in case develop those objectives. Objectives should be stated concisely and expressed clearly to the students. One aim of this type of instruction is to develop ability to recognize desired elements of operational situations and to propose courses of action which will employ accepted operational concepts and principles. Mere recitations of facts by the students are not sought. Instead the conditions or reasoning surrounding the existence of those facts should be emphasized by direct reference of the case study to the instructional objectives.

Case examples need not be restricted to classified information. Overtly published books and magazine articles often offer the instructor a wealth of promising material. But, as is the case with classified documents, overt publications rarely appear in the most advantageous form for student use. Books and magazine articles, like films, tend to accentuate the sensational and to skimp operational considerations of primary interest to the professional intelligence officer. Even where the facts are available in quantity, a tightening up and reorganization of subject matter is usually desirable.

The synthetic case constitutes another approach, but it is scarcely worth an instructor's time when adequate true material is obtainable. There are, if more applicable to the instructor's needs, particularly sensitive or relatively rare types of operations, the principles of which can best be illustrated by combining a number of true operational situations into the body of a fictionalized case. The location and setting can be chosen at will and problems of special significance can be highlighted. Yet this type of case is the hardest of all to do well. It appears that the farther away a case moves from true experience the more difficult it is to combine tangible and intangible elements which make an operational situation credible. Although excellent synthetic cases exist and are valuable as temporary substitutes for the real thing, it is advisable to label them as such.

In addition to integrating case material into a course by way of illustrations and directed class study, the instructor may also make cases available as auxiliary reading. The more time a student can devote to studying different types of cases the more effectively will he be able to bridge the gap between a grasp of material presented theoretically in the classroom and an appreciation of the ways it has been applied in real life. In each course a safe drawer containing good case studies is a goal worth careful consideration.

In selecting and reworking case studies the instructor should keep in mind the main trends and lessons apparent in each. Unless carefully chosen, cases tend to narrow rather than broaden a student's approach to a given subject. Illustrations which too closely parallel one another lead the student to develop stereotyped impressions and thus restrict development of his imagination and understanding. Detail which adds little to the general trend can smother a case and therefore should be eliminated. On the other hand, to keep the sensitive case as true as possible, sanitization should be limited to that level acceptable to the originating desk.

Properly presented and used in the class, case studies can be the stimulus for intensive class discussions. Students may be asked to defend certain actions contained in a case study or perhaps, critically analyze the case with the intent of pointing out errors or suggesting courses of alternate action which might have proved more successful. Another method is one which incorporates the technique of role-playing. The instructor presents, usually in a written form, only the background of a case which leads to a particular point of action. He then selects several students, designating specific parts to specific students, and requires these "actors" to perform with respect to their analysis of the case. The class and instructor should critique the performance of the role-players, pointing out the strengths and weaknesses of their actions. As a part of the summary the instructor may give the class the actual or real outcome of the case and encourage their comments.

A number of bibliographies have been developed in OTR which list publications offering professional treatment of a subject. A substantial number of these bibliographies can be located through the OCR Training Library. (Personnel in the library will compile up-to-date bibliographies on topics an instructor requests.)

Suitable items of overt material may be located in the instructor's home, on an office bookshelf, or requested on loan from the Library of Congress. Any such material may be adapted for study by staff personnel provided copyright regulations are safeguarded by use of the OF-FICIAL USE ONLY stamp on the top and bottom of each page. Before these papers may be used with non-staff personnel, however, copyright permission must be obtained through the Office of the General Counsel.

After checking what is already available in OTR, if an instructor desires to approach a particular Agency office or desk for case material, he is encouraged to do so after clearing with his school chief. Although no official arrangement has been reached, the Clandestine Services in recent years has been very responsive to OTR's interest in case history and has frequently on its own initiative offered cases to OTR. The current unofficial arrangement is based on the understanding that the instructor will submit his draft to the desk for comment and release (via the Clandestine Services Training Officer) before the case is used.

The preparation of the instructional materials is the most difficult task facing the instructor. The format issued the student should as nearly as possible duplicate the original papers in the case history. Where this is not feasible because of security or other reasons and, in all instances where "background" information or summaries of portions of the case are explained, a full narrative style should be used. A greater degree of realism is retained if the progress of the case follows in every way the actual running of cases on file in the operations offices. The student can thus be required to handle and apply cable writing and traffic procedures, effective filing methods, and other operational administrative techniques. If the case study is not used for illustrative purposes it may be developed with the student in several phases, with different requirements outlined for each phase. Materials for the instructor and pertinent information relating to methods of teaching to be used with the case study snould emphasize the objectives so that the instructors will not lose sight of them once they become wrapped up in the details of the case. Specific opportunities provided in the discussion plan for the case study so as to bring the student's attention to the relationship of the case to the instructional objectives should be made clear in the lesson plan and briefing sheets.

The student's interest, as it becomes apparent in the course of scheduled discussions or by way of unsolicited student comment, is useful in evaluating the effectiveness of a case study. The value of a case study can also be assessed by the frequency with which examples drawn from it can illustrate or be tied into other elements in the course. Periodic review of the cases used in a course is useful to spot gaps in coverage and undesirable overlap in the loverage, and also to determine whether or not new case material is needed to illustrate the new points developed as the course progresses. Evaluation of the student's proposals for action or their solutions are necessary to make the instruction effective as well as of evaluating the student's judgment. Although the general practice of presenting a "school" solution should not be followed, the instructor must exercise firmness and the courage of his convictions in supporting his solution. The instructor must give appropriate credit to the student's sound reasoning which may vary from his own. At the same time he must be prepared to show clearly the reasoning in the instructor's solution. Personal differences in opinion and hedging are not the prerogative of the instructor.

# J. AUTO-INSTRUCTIONAL METHODS

A training method which has been arousing interest among professional educators is one that has been variously called self-teaching, automated teaching, or auto-instruction. Carefully controlled study of this method is only just beginning, but encouraging results have been reported from its application to such subjects as algebra, arithmetic, logic, music, philosophy, physics, spelling, and the writing and speaking of foreign languages. Claims have been made that students have learned the fundamentals of such subjects not only in half the usual time but with half the usual effort.

An auto-instructional method not only requires the student to demonstrate what he has learned, but also immediately tells him whether he is right or wrong. Essentially, this is done with a series of questions and answers, known as a program. These question-and-answer combinations, of which there are usually a great many, lead the student by small steps to an ever-increasing familiarity with the subject. In the beginning the student is given strong hints to help him with the answers, but gradually the hints are withdrawn and the student finds that he is handling problems of steadily increasing complexity entirely by himself and with few errors.

A self-teaching program, once prepared, can be presented to the student in a variety of ways. Flash cards represent one of the simplest forms suited to this method. A more recent and more complicated form, intended for use with college students and adults, is the "programed text-book." This form uses a bound or looseleaf volume which requires the student to turn a page to find the answer to a question or problem. Still more complicated devices called teaching machines may be used whenever it becomes important to prevent the student from looking ahead to the answers or whenever it is important to get a record of his answers. As the name suggests, teaching machines are mechanical gadgets for controlling the way a program is presented and are not an essential part of the new method. They vary in size from portables to floor models and in price from \$20 to \$6,000. At present there are more machines available on the commercial market than there are programs.

There appear to be three major reasons for auto-instructional success. One is the fact that the method forces the student to take an active part in the learning process. He must be more alert than is required of him in the usual lecture. A second reason for its apparent success is the added incentive aroused in the student by being promptly informed of any mistakes. The third reason lies in the succession of small steps through which the student is led to his ultimate mastery of the subject. All of these reasons contribute not only to solid growth in skill and knowledge but also to increasing self-confidence in handling the new material.

Perhaps the most serious disadvantage of the new method is the considerable investment of time and effort needed for proper programing. For example, over 3,000 items had to be developed in the programing of a basic physics course. Programing took the equivalent of almost a year's work on the part of a well-trained professional; such an elaborate program is bound to be tedious to revise. For these reasons, auto-instructional methods may be impractical for teaching subjects that are either rapidly changing or infrequently required.

#### K. RELATED CONSIDERATIONS

Closely related to the methods of instruction are several factors which the instructor must be cognizant of in his instructional planning. These factors cannot be classified as methods per se but yet they have an important bearing on the general learning process.

# 1. Required Reading

In many courses there is material which students are expected to read. We refer to this as required reading. The problem in this area lies not so much in the selection of material but the assurance that it is read.

The best insurance that required reading will not be neglected is to point out the purpose beforehand, relate it specifically to something within the course, indicate the degree of attention which should be given to each reading assignment and the objectives to be attained in accomplishing the reading. Make a definite effort to use it in class. The majority of students will read material you have demonstrated is germane and useful.

Reading assignments can easily become too extensive, burden the conscientious student and cause others to disregard it entirely. Make certain that ample class time is available, or if the material is unclassified, that students have time out of class to read it. It is a help if you include the list of material in the schedule and relate it to the scheduled class work marking it "scan," "read carefully," or some other direction.

Insofar as possible and practicable, much of your subject matter may be used as required reading rather than presented in a lecture. This technique is frequently effective if the students assigned to the course have a diversified range of abilities.

# 2. Note-Taking

There have been considerable differences of opinion as to whether or not note-taking is generally beneficial. There is no definite satisfactory conclusion. Note-taking is a method of a student's increasing repetition of the material which is being presented. Some students

take notes as a matter of course and feel uncomfortable if there are no instructional provisions for them to do so. Others become so involved in taking complete, well-organized notes that they fail to get full benefit from the class presentations.

Note-taking is usually necessary when adequate written material is not available and future reference will be necessary, or when the material must be memorized or retained in a particular sequence and for a particular purpose.

If note-taking is a necessity, the instructor should give the students an outline of the major headings of his instruction. There should be adequate space for notes under each of the headings. The use of the outline keeps the major points before the student while allowing the instructor to make the supporting or illustrative material more meaningful.

Sometimes to stimulate closer attention to oral presentations, the instructor might require the students to prepare and hand in to him a written summary of his oral presentation. This obviously is a type of punitive measure which should be indulged only in rare instances.

### 3. Guest Speakers

There are advantages and disadvantages in the use of a guest speaker. He may be invited to lend prestige to a course or he may have a competence in a given field and represent the latest current thinking which is not found among the members of the regular faculty. One disadvantage, except in rare cases, is the guest's method of instruction and frequently the coverage of his subject is difficult, if not impossible, to control.

Whoever invites a guest speaker should determine first whether or not the man is a competent lecturer and instructor. The chief instructor of the course should explain the objectives of the guest's assigned subject, explain its place in the overall objectives and coverage, and outline what has and will be presented. He has to know the length of time allotted to him. He should know the type of students in the class. The course instructor must spend considerable time with the guest speaker before the presentation, specifying in detail the actual material to be covered and assisting in planning the presentation. The guest speaker should be asked to provide, in advance, a copy of the outline of his presentation in order that any modifications may be suggested before the actual delivery. You, as the instructor, must furnish the guest speaker information as to the place of his presentation, the exact date and time, and be in attendance to properly introduce him to the class, remain to monitor his presentation, and to sum up or, if desired, lead a discussion. Your guest speaker may desire you to have (or you may volunteer such a service) a training aid produced or made for his presentation. It will be your responsibility to follow through on this request and see that the aid meets with his approval and is such that it accomplishes the purpose for which it was requested.

There are innumerable implications and ramifications the instructor must consider when he invites a guest lecturer. Basically, there are three types of guests: those within the Agency, those outside the Agency but working for the Government, and non-Government employees.

Several items must be considered when you invite a guest. First, how do you request his assistance? If it is for an Agency employee, discuss the procedure with your school chief. It may be that the status of the guest suggests an invitation extended by the Director of Training. With external speakers your school chief will give you advice but in all probability it will be an invitation extended over the name of the Director of Training. In every case of external speakers, the Offices of Security and Training must be consulted for clearance procedures. Security clearances may be of different required degrees. For reimbursement of expenses, the main concern is with the external non-Government speaker, in which case the usual procedure is pay straight consultants' fees in addition to normal per diem and travel allowance.

If you use an Agency guest speaker, the DTR may send an annual letter of appreciation. On external speakers, particularly if they have done an outstanding job, a letter noting this reaction should be sent over the Director of Training's signature to the man through his supervisor.

There is probably one main rule or suggestion that might be offered the instructor in the use of guest speakers: Use as few guest speakers as possible. It is strongly desired to develop within OTR the capability of giving all presentations by OTR personnel rather than call upon a guest speaker. Until we reach this capability, we are faced with the considerations outlined above in using guest speakers.

#### 4. Tutorials

Private, tailored instruction provided to a single individual or a very small group is called tutorial. This method of instruction is used for students who, for reasons of special subject coverage, security, or expediency, cannot be accommodated by a regular course.

Tutorial instruction entails a direct relationship between instructor and the student. This method permits concentration on items of most direct benefit to the student and it permits a speed of instruction geared to a capacity to learn. It also provides better opportunities for determining the student's achievement than is possible with larger groups. The instructor can more easily probe into a student's personal and operational attitudes than can most any other person who sees the student in the course of his official activity. It has also been found that when safehouses rather than classrooms are used the operational atmosphere presents a more realistic, less academic approach by both instructor and student.

On the other hand, the tutorial situation requires considerable instructor time per student and qualified instructors are not always available. If a variety of subjects is taught, tutorials may require the services of several instructors since it is the exceptional instructor who has the competence to teach effectively the varied subjects.

The first important step in arranging for a tutorial is for the instructor to meet with the sponsor of the program to determine the training objectives. The sponsor should provide a briefing in substantial detail on the student's projected duties, the level of competence desired in each subject, and particular qualities in the student to be observed and evaluated. The instructor should decide on the method of instruction consistent with the objectives. The sponsor and instructor must determine the security measures to be implemented. Next is the scheduling of training and arranging for a place of conduct. After this the instructor organizes his subject material and course schedule, ensuring the best apportionment of available time and the use of instructional methods most appropriate to the knowledge or skills to be gained.

Whenever a trainee has difficulty in responding to instruction in English, and especially when an interpreter is required, there is a decrease in speed and efficiency. This problem on the use of interpreters is a complex one and it is explained fully in another OTR text.

When this type of instruction cannot be given in a regular classroom, there are a number of security and administrative problems which make it almost an operation in itself. These include the identification and procurement of a suitable location and the development of an adequate cover for the instructor, the student, and the meetings. Security requires that written work, including notes, are taken from the student by the instructor at the close of each work day. Aids used in this special training must be portable and should be so designed that the instructor can take only that which he will use in a given session. When sound films are shown earphones are needed. The  $2^n \times 2^n$  slide or 35 mm strip projector is an excellent device to use in this situation because of its size and effectiveness.

The instructor must keep in mind that frequently his student must become capable of training subordinates or associates. The instructor must then plan, organize, and conduct his training sessions with the additional objective in mind that his instructional techniques will be copied to a large degree by his student. The effectiveness of your student to transmit factual knowledge and skills to subordinates or associates depends primarily upon his ability to teach. If specialized instructor-training is not given to him, his ultimate effectiveness will have to depend mainly upon the methods you use in your tutorial sessions to teach him. When you realize this situation exists, you will conscientiously select your methods of instruction so that your student will be as capable a teacher as possible. This is a true test of your ability as an instructor. Askyourself: Based upon the training I have given him, will he, in turn, be an effective instructor?

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As an example, suppose you were teaching in a hotel room the subject of "Leadership" to your student with the realization that he will, in turn, have to go out and teach his associates. You might use effectively the overhead projector and some transparencies (discussed elsewhere in the <u>Guidelines</u>). Can your student, in <u>his</u> instruction, use this projector and technique? If not, why not use instead the blanket on the bed as a flannel board base with flannel or sandpaper backed boards to illustrate your points of instruction? This technique, or some other simple aid as pad of paper and colored chalk or pencils, is applicable to almost any situation in which your student might have to conduct his training.

# III. INSTRUCTIONAL AIDS

Instructional aids are sound-sight devices used to help students better understand and achieve instructional objectives. Initiative or lack of it is the principal limiting factor in the development and use of instructional aids. The desire and need for an instructional aid must originate with you and relate to your subject matter presentation. Fundamentally, you are the only person who can decide where you can use an aid, how it can best be used, and where you can obtain one. The more common aids are films, film strips, slides, cartoons, illustrations, maps, chalkboards, bulletin boards, and graphics. You can make your own charts, film strips, vu-graph transparencies, and other aids but others can help you, if necessary. Generally speaking, your instruction will be more effective and students will retain it longer if you make proper use of instructional aids.

An understanding of the principles of instructional aids will improve your use of them and consequently improve the depth of learning on the part of your students. Properly designed and used, they will often assist in introducing a topic for discussion, help in making a presentation, aid in the application of a lesson, or serve a useful function in other phases of an instructional period. A good instructional aid is not cluttered with distracting details, though many charts and drawings contain too much lettering. Whenever possible, let verbal explanation substitute for distracting details. Instructional aids are not totally distinct from verbal instructions but are an integral part of them, for visualizing should not be separated from verbalizing. To utilize them correctly the instructor must be fully aware of what aids can or cannot do. The human eye, like the mind, considers one important thing at a time. An instructional aid should illustrate only one main idea or procedure at a time.

#### A. USE OF INSTRUCTIONAL AIDS

Instructional aids are used particularly when the appeal to the senses will be increased to promote more effective learning or when any process is too dangerous, expensive, delicate, fast, or slow to observe in actual operation. Aids can help you to:

- 1. Show the relationship of a part to a whole or to other parts. Organizational charts, flow charts, or mock-ups may be used to show such relationships.
- 2. Simplify complicated processes or materials for easier understanding. Schematic diagrams of circuits or systems are often used for simplification.
- 3. Emphasize ideas. An idea will stand out vividly if it is presented by an instructional aid. Color, shading, and magnification are a few of the means of indicating emphasis.
- 4. Stimulate the student's interest and morale. An instructional aid is far more effective in attracting attention and creating interest than a verbal description. They can relate new ideas to old ones. They can appeal to basic interests and drives. Of course, the aid should direct interest to the intended thought rather than to itself.
- 5. Represent abstract ideas. Concepts, philosophies, theories, and other abstract ideas can be vitalized with instructional aids. Adding concrete dimensions to an abstraction may be absolutely necessary for beginning or slow students. For example, communism is frequently depicted in the concrete symbol of the iron curtain or the hammer and sickle. Democracy is frequently depicted by a picture of our Statue of Liberty.

## B. ADVANTAGES OF INSTRUCTIONAL AIDS

Some authors indicate that about 75 per cent of knowledge and learning comes through our eyes, about 13 per cent, our ears, about 6 per cent through our sense of touch, and about 3 per cent each from our sense of taste and smell. This is a strong argument in favor of instructional aids. And if it is true that only 13 per cent of knowledge and learning comes through our ears, then the instructor must do more than just deliver a lecture to his students. Some advantages of instructional aids are that they:

1. <u>Increase uniformity of training</u>. In classroom situations where no aids are utilized, the student's comprehension is conditioned by the methods of presentation by different

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- instructors. One instructor may express himself fluently, another may be somewhat inarticulate although he knows his subject equally as well. Training aids may help to minimize some of these differences among instructors teaching the same or similar subject.
- 2. Save training time. There are research findings to substantiate the claim that the use of instructional aids to bridge the gap between verbal instruction and direct experience result in more learning in less training time.
- 3. <u>Increase retention</u>. The major part of the things students hear is forgotten in a relatively short time and it is difficult for them to recall accurately what was heard. On the other hand, things that are seen make a more lasting impression and students experience considerably less difficulty in recalling accurately the object or process. They normally have a greater interest in the realistic and concrete than they have in the symbolic and abstract.
- 4. Improve understanding. Students can interpret things only in terms of their own background experiences, consequently, it is quite probable that a group of students will form different ideas about the same thing as a result of the verbal description. A verbal explanation is not always sufficient to make the students understand the proper relationship of the various components of an object or subject under consideration.

#### C. BASICS OF A GOOD INSTRUCTIONAL AID

A good instructional aid should have the following characteristics:

- 1. Simplicity and unity. There should be singleness of ideas, unadorned with irrelevant and distracting material. Too many graphic aids have ideas that are distracting and do not increase retention.
- 2. Color. This factor may be achieved through the use of an attractive design, color, movement, or form. Care must be exercised to insure emphasis on an important idea. For instance, the use of a bright color on an unimportant detail will draw the attention of the student away from a more significant idea.
- 3. Flexibility. No instructor worthy of the title should ever teach the same lesson twice in exactly the same way. Likewise, no two students have exactly the same temperaments, abilities, or desires. In light of these facts, the instructor should select his instructional aids so that they can be modified if necessary and thus kept up to date. Motion pictures are expensive, the sequence of presentation is fixed, and it is practically impossible to insert new materials. If a movie is to be included as an aid this drawback should be carefully weighed against the tremendous appeal movies have through movement. Colored slides, too, are much more flexible than a colored film strip.
- 4. <u>Timeliness</u>. Any aid that is not consistent with the presentation of the lesson material loses the major portion of its effectiveness. Motion pictures shown "when the film or auditorium is available" are almost useless in terms of training objectives.
- 5. Visibility. Any instructional aid should be large enough so that every student can see the smallest significant detail. No one's view should be obstructed. Strangely enough, the most common fault in the use of instructional aids is that aids are hidden wholly or in part by the instructor, the heads of the students in the front seats, classroom equipment, or glare on glossy surfaces.

#### D. TYPES OF INSTRUCTIONAL AIDS

The value of different types of instructional aids for improving instruction has been proved again and again. It has also been found that combining different types of instructional aids will add further to the effectiveness of instruction. In selecting materials to expedite training it is important that the advantages of different types of aids are taken into full account. In planning coordinated use of training aids it is essential that the innerrelations of different aids are considered as well as their respective advantages. The <u>Guidelines</u> cannot make an attempt to discuss every type of instructional aid. It will, however, indicate a few main advantages in the use of representative aids common to our teaching functions.

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- Motion Pictures. Motion pictures are particularly effective in portraying and simulating actual situations because they include both sound and motion. They may be used to develop attitudes, to pose problems, and to give information. In this connection motion pictures may be used to slow down fast action for study and conversely to speed up slow processes. Through animation, films may be used to explain theories and show internal functions that may not otherwise be portrayed. For example, the motion picture may develop a situation in interpersonal relations and the instructor may cut the film off at a particular point in the development of the situation and ask the class to then role-play or discuss what possible courses of action are opened to the characters in the motion picture. The remaining portion of the film should subsequently be shown to illustrate what actually was done or some acceptable action or solution. The instructor must always introduce the film to the students. The purpose of the film is explained in his introduction and also the particular items or points within the film the students must observe. You may ask questions which are answered in the film. It is suggested that you refrain from commenting on the motion picture during the projection unless it is a silent film. You must follow the showing with a discussion, obtain answers to your questions, and resolve any conflicts of ideas. A short, objective test may be given on the main points or issues in the film. However, it is not advisable to have a written test after every film.
- 2. Still Pictures. Still pictures, either opaque or transparent, are valuable in presenting material that does not involve motion or in which motion is not of special import. Still pictures have a major advantage over motion pictures in that they may be left on the screen or posted in the form of wall charts for observation and discussion by the students and instructor. Film strips of 35 mm have a specific advantage when it is desirable to have a series of still pictures always in a particular sequence. Film strips lend themselves to instruction involving step by step procedures such as those in assembling, disassembling, or servicing equipment.

Slides that are  $2^n \times 2^n$  (35mm) or  $31/4^n \times 4^n$  have a special advantage when it is desired to arrange a number of still pictures in different sequences to provide the training needed by different groups or the training needed at different times by the same group. Slides also make it possible to select items from different units and to prepare illustrated lessons to highlight and review general points. One advantage of slides is their compact form for portability. Slides, like film strips, can easily be made by the instructor himself. Three-dimensional slides have a specific advantage when depth perspective is necessary to clarify the understanding of subject matter. One disadvantage of such slides is that students must wear special polaroid glasses to obtain the three-dimensional perspective.

3. Overhead Projector. The vu-graph, or overhead projector, is a device whereby, from the front of the classroom, the instructor can project transparent pictures, charts, graphs, etc. on a screen in front of the classroom. The vu-graph is one of the most effective training aids an instructor can use. The main advantage of the vu-graph is that it avoids the necessity for the instructor to go to the back of the room during the projection where he will lose eye contact with his students. Further, the room does not need to be darkened, although it may be. In essence, the vu-graph is an illuminated blackboard with a distinct appeal and motivation for the student and many of the procedures and suggestions on the use of the blackboard are applicable to the vu-graph.

A disadvantage of the vu-graph is that the seating arrangement of the classroom is frequently such that several students cannot see the screen because it is blocked by the "head" of the vu-graph. This disadvantage can be eliminated by rearranging the placement of students, the projector, or you may have a small table built for the projector, lowering it down to chair height. New model vu-graphs have small "heads" which overcome this disadvantage. Transparent slides for the vu-graph may be made by the instructor, or preferably they may be prepared professionally. There are a number of media that the instructor can use in developing his lesson on the vu-graph. The instructor can, through the use of waxed pencils or felt-tipped colored pens, develop his own training aid and lesson outline as he proceeds with his teaching, keeping the students' eyes and attention on the screen and yet always maintaining eye contact with the students so that

questions and discussion can readily be developed. The vu-graph lends itself nicely to the strip-type instructional aid in which one portion or one idea of the lesson is shown at a time. Over-lays, the reverse of the strip-type, consist of a number of transparencies mounted on the same frame and projected in sequence and with which the instructor can add or build up various concepts, pictures, organizations, words, and ideas onto the illuminated screen.

One of the latest developments in the use of the vu-graph is that of animation and motion produced by adding polaroid materials to the transparency and a moving polaroid plate attachment to the vu-graph "head." This technique is particularly applicable and effective to showing the movement of electricity through a wire, water or steam through a pipe, electrical current through some electrical motor or component, or the development and flow of paper work, policy, or chain-of-command from one component to another as in an organizational chart.

- 4. Opaque Projections. The technique of opaque projection has the same instructional advantage as the glass slide projection in that still pictures may be easily arranged in varying order. Opaque projection may be used for showing anything that is not transparent, for example, actual (small) objects, pages from books, magazines, or maps. However, it has a distinct disadvantage in that the intensity of illumination is quite low and the room must be darkened. If a vu-graph transparency can be made from your material, the use of such a transparency in the classroom is much more effective than opaque projection.
- 5. Charts. The chart, made on cardboard or pad of paper, is one of the easiest to use and most economical aids available. It is easily adapted to almost any size of student body. It is very versatile in that it can supplement almost any topic you may present. A series of charts, usually fastened together at the top and mounted on an easel is known as a flip chart. The flip chart, as any visual aid, should be covered until you are ready to use it. This will give more impact to your presentation and prevent the audience from being distracted from your talk. When you no longer need it, cover it up or remove it from sight of the students. Flip charts have been used effectively to demonstrate relationships among equipment parts. Charts with hinged over-lays are more economical than actual models; for example, when it is essential to show three-dimensional perspectives of component parts of equipment. In an emergency an instructor can easily produce his own charts by using any media such as paste-on letters or symbols, colored pencils or chalk, felttipped pens, or magic markers. The important point to remember is simplicity. If you want your charts to be read, then be brief and illustrate only the important points. Do not try to tell the whole story on one chart. Another similar type of chart is known as a stripchart in which the information on the chart is concealed by means of a cover strip. The removal of each cover strip serves as an attention-getting factor. The mechanical arrangement must be simple to avoid the possibility of embarrassment. Charts may be easily posted for reference and review so that they may supplement or complement the use of projected slides.
- 6. Cartoons and Illustrations. The American people react spontaneously to this type of illustrative material. They are accustomed to its use in newspapers, magazines, and bill-boards. They turn quickly and readily to pictures which present information they are seeking. Cartoons arouse interest and contribute to instruction by speeding up learning and aiding retention. They make their point by using satire, exaggeration, humor, fantasy, and absurdity. Appeal is instant and deals with a single main idea. The logic of the cartoon lies in its implication and it should be self-contained without relying upon extensive captions or explanation.
- 7. <u>Models</u>. Models are valuable for presenting subjects that require three-dimensional perspective. They simulate actual equipment but may be as large or small as required for good instruction. Models have a special advantage in that they can be designed to show interrelations along with three-dimensional perspective. A second special advantage is that they can be designed in such a way that they can be dismantled part by part for detailed study. Different colors may be used to distinguish different parts and systems of the model.

There are several general classifications of models and they are different as to their type and their use.

- a. <u>Solid models</u>. This group of models includes the enlarged, reduced, or any model executed to actual scale. These models are used chiefly for their external recognition features. The enlarged one is used when the actual object is too small or minute for close examination, and the reduced type is necessary when the real object is too large and clumsy to be used successfully for classroom instruction purposes.
- b. Cross section, transparent, or cut-away models. This is a cut-away or sectioned model to show to the best advantage the important internal features of an object, illustrating the functions and relationships of the various parts. The chief value of the transparent, or x-ray type model, is that of showing the interior sections of the object plus the rear and the sides without the use of the cut-out or cross section view. This form of the model is used in demonstrations when it is necessary to see the innerworkings of a piece of intricate and complicated equipment or machinery.
- c. Working models. Working models are reduced or enlarged replicas of the originals. It is a working device which will vary in size from the original but still maintain the same principles of operation. Working models may range from the simple to the very intricate. One modification of the working model is a mock-up.
- 8. Mock-Ups. Mock-ups are simplified workable models. They have the same advantages as models, with simplicity of function as the added feature. They are usually designated so that the student may actually operate them to observe relationship of working parts, e.g. a mock-up of the hydraulic system of an airplane. Simplified operational mock-ups have a special advantage; they may be used to demonstrate basic principles involving motion of complicated systems without themselves being too complex. Unlike models, their design eliminates details that are not essential in illustrating principles. They may be used to introduce work on intricate systems and they may be followed in turn by the use of still pictures, motion pictures, and actual equipment to complete the details of instruction.
- 9. Relief, Terrain or Topographical Models and Sandtables. As a special type of model, sandtables are reduced scale models of a specific terrain, target area, or landscape. A good relief terrain model contains as much information as many maps and photographs. Although it is three dimensional, it can be made as accurate as a map. It is important to remember that they should be constructed to scale and should be used in conjunction with similar scale contour maps. Combining the two gives you greater assurance that the interpretation by your students of maps in the field will be more accurate and realistic. The source material for the construction of terrain models includes standard charts, maps, intelligence information, terrain studies, oblique photographs, etc. A disadvantage in maps and charts is in their two dimensional or flat character, whereas the advantage of a good sandtable model is in the realism of the represented area as it is presented in miniature, colored, and textured just as it would be seen from an airplane. A few subjects that can be effectively illustrated and taught on the sandtable or any similar terrain devices are surveillance techniques, drop zones, terrain analyses, tactics, communication, and field organization. In effectively using sandtables there are several suggestions for consideration:
  - a. Be sure that all students can see it clearly. This can be done by providing a contrasting background or by illuminating it with a spotlight or desklamp. If a class is seated, visibility can also be improved by placing the object below the student's vision level or by tilting the table. If the class is standing, the instructor should stand on a platform or table.
    - b. Be sure that all students can hear your explanation or instruction.
  - c. Demonstrate step by step and complete the entire demonstration before permitting the class to handle or manipulate any part of the model or equipment. Relate each part of the whole operation when demonstrating complicated equipment. Repeat the demonstration until the class has a clear understanding of it.

- d. Discuss principal parts of the demonstration by leading a discussion at the end of it. You will help the student clinch the outstanding points and clear up any misconceptions. Application of what has been taught should be carried out by the students as soon as possible after the demonstration.
- e. Use supplementary aids. Photographs, statistical charts, maps, and diagrams will help to show how each part relates to another and to the whole. They can also illustrate how the model or equipment is used in actual operation.
- 10. Maps. Maps are vital aids to instruction because of their value in presenting tactical or logistic situations. They reduce geographical areas to meaningful dimensions and give significance to topographical features. Distances, directions, elevations, and locations can be learned from an accurate map. Directly or indirectly, maps convey a vast amount of information on the distribution of peoples, land and water areas, animal and vegetable life, climate, economic resources, and other natural phenomena. They provide valuable assistance in training on sandtables or in problem situations like surveillance training and casing.
- 11. Blackboard. The blackboard or greenboard is one of the most common and widely used tools of learning. Its versatility and effectiveness make it a valuable aid to most types of instruction. It has two important characteristics: the material presented on it can be erased and the board used over and over again; second, the board serves as an excellent medium for classroom activity involving joint student-instructor activity. The following principles are fundamental in the use of the board:
  - a. Keep it clean.
  - b. Erase all irrelevant material.
  - c. Keep chalk, erasers, cleaning cloths, rulers, and other aids readily available so as to avoid distraction and interruption.
  - d. Organize and practice board presentation in advance, especially if it involves anything complex as a drawing or a chart.
  - e. Write or draw large enough so that all in the group can see the information clearly.
  - f. Do not clutter the board.
  - g. Keep the material simple and brief.
  - h. If necessary, use the ruler, compass, or other devices in making drawings and lines.
  - i. Use colored chalk or underline statements for emphasis.
  - j. Use a pointer to indicate material. Do not talk to the board. Stand to the side of the material being presented so that all students can have an unobstructed view.
- 12. Flannel-Graph and Magnetic Board. These devices are similar in nature as to instructional use but are made of different materials. The flannel-graph consists of pieces of rough sandpaper, abrasive side out, glued to the back of cardboard cut-outs. Pieces of flannel may be glued to the back of these cardboard cut-outs instead of the sandpaper. When these cutouts are placed against a blanket or felt cloth which has been stretched over a smooth surface they will adhere to the rough surface of the flannel. The surface should be tilted slightly from the vertical so that the cardboard cut-outs will not fall off. The magnetic board is a device similar to the flannel-graph. A sheet of metal, usually painted, is used as a foundation. Small magnets are glued to the underside of cardboard cut-outs which contain the graphic material to be presented. An alternative is the use of light-weight metal, cut to represent symbols or objects, with magnets attached to their underside. Some materials can be held to the board by placing small magnets over them. The instructor may place the cut-outs in any manner he desires since the magnets adhere to the sheet of metal. Both of these devices are excellent in teaching a sequence of knowledge or build-up of points or concepts, or in employing symbolism to explain relationships. These are also excellent devices to illustrate surveillance techniques or to show changes in a tactical situation. Use may be made of cutouts of arrows and military symbols to show directions or locations and ribbons and color tapes to show lines of operational nets.

- 13. Recordings. Recordings have specific value as instructional aids. They help to convey information, develop concepts or attitudes, develop auditory skills, and promote action. Recordings are used to teach radio codes, standard commands, certain communication subjects, and foreign languages. They are valuable for informing and inspiring students through eye-witness accounts of actual experience. This is also a valuable aid for the instructor to use with individual students in order to improve their speaking ability and interviewing techniques. There are three main types of recordings: the disk, such as those made by local recording companies; the wire recorder, using a fine steel wire; and a tape recorder which records sounds on a magnetically coated plastic tape. The commercial dictating machine is a modification of these types. Here are some suggestions for using a prepared recording:
  - a. be familiar with the recording and be certain it fits the purpose of the lesson
  - b. check the correct speed, tone and volume before class
  - c. explain the contents and inform the class of the reason for its use
  - d. pose questions pertaining to specific points to be heard in the recording
  - e. stop the recording at predetermined points and check the group's understanding, summarize key points, and continue
  - f. relate the content of the recording to previous or subsequent learning activities.

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# IV. EVALUATING STUDENT PROGRESS AND ACHIEVEMENT

"Am I getting across?" you ask yourself as a course proceeds. "Was this the point?" a student asks himself as he mentally reviews a lecture he has just heard. "Am I getting the knack?" another student asks as he starts to learn a new skill. "How did my man do in training?" asks a supervisor. To get answers to such questions instructors use a variety of methods for evaluating the student's progress and achievement. These methods range from the casual to the systematic, from the periodic to the end-of-course only, from the highly subjective to the reasonably objective, from the comprehensive to the spotty.

Whether the chief beneficiaries of your evaluation methods—you yourself, your students, and your students' supervisors—acquire a vague or a rather precise awareness of each student's progress depends upon a number of factors. The primary considerations are these: what you evaluate, how you evaluate, and what you do with the results of your evaluation.

#### A. WHAT YOU EVALUATE

A fairly common practice among instructors teaching a course for the first time is to wait until near the end of a course unit or of the entire course to begin thinking about tests for evaluating students' achievement. This is a cart-before-the-horse approach and strongly suggests that the instructor has been lax in doing rigorous and disciplined thinking about course objectives before "jumping into" his instruction.

Adequate evaluation begins not with the construction of tests and other evaluation devices but with the formulation of objectives for the course as a whole and for each unit, phase, or area of a course. The development of objectives is covered in another section of <u>Guidelines</u>. We will just point out here that evaluation rises and falls to a large extent with the identification of objectives in terms that are explicit, very specific, and descriptive; not of what the instructor does, but of how the student is expected to be different from the standpoint of knowledge or skill at the end of a unit (or course) of instruction from what he was at the beginning.

Once objectives are adequately delineated, effective evaluation requires comprehensive and detailed coverage of them all. It is easy to fall into the habit of evaluating a student's mastery of only those objectives for which evaluation is easy and to overlook or only superficially treat objectives for which evaluation is difficult and also considerably more important. For example, it is much easier to develop tests of sheer knowledge than to construct devices for evaluating skill in applying the knowledge.

One further point needs to be mentioned regarding what you evaluate. Acceptable evaluation requires not only that you have comprehensive coverage of detailed objectives but also requires that you limit yourself to these; that you not go beyond them. At first glance this admonition may seem strange, even foolish. "Why," you may ask, "would any instructor want to burden himself by evaluating a student's mastery of objectives that are not part of the instruction?" Strange as it may seem, it is a frequent temptation to an instructor, particularly with training that makes use of a number of action or "live problem" exercises, to appraise a student's performance with respect to many characteristics other than, or in addition to, those directly related to the objectives -- characteristics which the training actually makes no pretense of developing and often has little capability of developing. When this happens, the instructor has bypassed or gone beyond evaluation of student achievement and is engaging in assessment. This is not to say that instructors should never undertake assessment; in fact, they are frequently in a uniquely valuable position to do so. Whether or not they should make the attempt is a matter of OTR policy for each individual course. But, to himself, to his students, and to his student's supervisors, an instructor should not misrepresent assessment as evaluation of a student's progress in mastering what is being taught.

#### B. HOW YOU EVALUATE

Within the limits of this text we can barely acquaint you with what could usefully be communicated about methods of evaluating student progress. What we will attempt is a delineation of basic principles of sound evaluation and an attention to general methods.

If evaluation is to serve the teaching function it so effectively can, it is mandatory that you make a check on student's progress at frequent intervals. Only in this way can misunderstandings and other mistakes on the part of the student be caught before they become habitual and have to be unlearned with considerable effort and stress. Thus, only in this way can you adapt your instruction to the pace of the student's learning, be it fast or slow, complete or partial. If you wait to do any evaluating until the end of a course or of a major portion of instruction, you are not giving yourself the optimum chance for your instruction to be effective.

It is helpful to consider evaluation methods as being of two general kinds: (1) written or oral tests and (2) practical exercises, which may be oral, written, or action. If the ultimate training objective is application or skill, tests can be very useful in preliminary stages of instruction to check on the student's progress in learning terminology, principles, identifications, and similar information. Moreover, the resourceful and knowledgeable examiner can construct questions which simulate practical situations and require careful and sophisticated thinking on the part of the student.

Tests can be broadly classified into those that require the student to give the answer and those that require him to choose the answer. The latter have great appeal to many instructors because they appear rather easy to construct and they greatly simplify and speed the "correction" of the student's responses. While these considerations are not unimportant, especially with classes of any size, a more significant advantage of choice tests is the possibility of coverage of a maximum amount of subject matter in a given amount of testing time.

Unfortunately, far too many instructors place extensive reliance on true-false test items. Almost invariably this is a very ineffective way of finding out what your students are learning. The element of chance is so great that you are seldom sure what the student really knows. If you are testing simply for knowledge or information, a more efficient type of question is that which requires the student to give a short answer. If true-false items are aimed at testing for understanding of principles, there are a couple of variations that add considerably to the value of the question: one is to require the student to explain his answer (there are even some items for which either a true or false answer might be correct, depending upon the explanation in support of it), and the other is to have the student rewrite those statements which are false.

Multiple choice test questions are usually better indicators of what students are learning than are true-false items. If a major objective of your instruction is to develop the student's skill in making certain discriminations and if there are really frequent sources of confusion or misunderstanding in arriving at such judgments, then the multiple-choice test is ideally suitable. The wrong answer alternatives should be common student errors, drawn either from your general impressions or, better, from a trial of the test question requiring free responses in earlier classes. If you find that in attempting to construct a multiple-choice test question you have great difficulty in producing wrong alternatives that are "reasonable," then it is unlikely that this is the appropriate kind of question for what you are trying to evaluate.

In general, test questions that require the student to compose his own answer, be it only a word or phrase, demand more of the student in the way of retention than do questions which require him only to choose the answer. It is often taken for granted that "compose the answer" examinations require more thinking on the part of the student than do "choose the answer" examinations. Actually, this is a somewhat uncritical view. The amount of thinking required is primarily dependent on the nature and content of the question. Specialists in testing and subject-matter experts, working together, have become very skillful in developing multiple choice questions that require a student to do precise and rigorous thinking in complex subjects.

The best written examinations are probably those that include more than one type of test item. A particularly good combination appears to be multiple-choice and short answer (anything from a word to two or three sentences).

A word should be said about oral examinations. Because of the probing which is possible, they appear to enable a more penetrating evaluation of what a student has learned than most written examinations and would seem to warrant more use than they have had in OTR courses. A particularly difficult problem in the use of oral examinations is comparability from one examiner to another. Far too often in academic and other settings the appraisal of a student's performance in an oral examination has depended as much on who the examiner was as upon the performance itself.

In view of the purpose of a substantial portion of our training, much evaluation of student progress is undertaken through the use of practical exercises. The requirements for an effective practical exercise are essentially the same whether it is conceived of as primarily a training exercise or primarily an evaluation exercise. In fact, for a practical exercise to have maximum instructional impact, evaluation is a critical part of it. The distinction between a "training" and an "evaluation" exercise is not in whether or not evaluation takes place but rather in what is done with the results. If training is the primary concern, then focus would be on the critique to the student with presumably little concern for grading. If evaluation is the primary concern, then focus would be on rating or grading and description of the performance.

The best practical exercises appear to be developed when careful attention is given to spelling out specific, detailed objectives of the exercise before any attempt is made to construct it.

The briefing given the student as to what is required of him in a practical exercise is very important for accuracy of evaluation. It is crucial that the briefing or instructions are explicit and crystal clear; consequently, a written briefing is almost mandatory. Instances where complete reliance on an oral briefing have led to ambiguous understanding and wasted training time are more numerous than one would wish. For some hard-to-understand reason, occasionally an instructor will take special pride in giving students only the vaguest notion of the task required of them in a practical exercise. To be sure, elements of surprise are essential parts of many exercises. We are not suggesting that a briefing should tell the student of situations he will encounter or how he is to meet them; we are contending that the briefing should give him the general outlines of what is required of him and what his task is, without any chance of misunderstanding. Anything less than that is indefensible, unless an objective of the course is to develop student's skill in second-guessing the briefer.

The crux of evaluating by means of practical exercises is the criteria of adequate and inadequate performance. A little reflection quickly leads to the realization that only an overall appraisal of the student's quality of performance is of little practical learning use to him. What he wants and needs to know are the specific strengths and weaknesses of his performance. Thus the judge of the performance must have specific criteria. As a matter of fact, any instructor who observes and judges students carrying out practical exercises finds himself at least casually and implicitly setting up certain criteria. Whether these remain vague and somewhat haphazardly applied or are made explicit and systematic makes the difference between careless and competent evaluation. In a word, what is required is an evaluation guide or check list as a reference for observing and recording the student's performance (incidentally, the same kind of guide is also required for appraising answers to free-response questions on examinations). Although instructors occasionally make effective use of guides or check lists that are only mental, the written guides are much preferred and better insurance of their adequacy. When more than one instructor evaluates performance on the same exercise or when a new instructor takes over, written evaluation guides are vital tools of communication.

Objectivity should be a primary goal in the development and use of every evaluation method. Unfortunately the term "objective" in reference to evaluation has come to be associated largely with so-called "objective" tests, usually meaning tests of multiple choice, matching, and like questions. Actually, these are not necessarily any more, and sometimes are even less, objective than other evaluation methods. When we speak of it we mean that the appraisal of a student's performance should be essentially the same, regardless of the qualified judge who is evaluating his examination paper or observing him in a practical exercise and that different students taking the same examination or performing the same exercise should be evaluated against the same criteria. In evaluating a student's accomplishments by means of a practical exercise, objectivity can best be assured by: (1) the use of a written guide listing specific criteria based on the judgments of several qualified instructors or other authorities on the subject of instruction; (2) stating criteria as nearly as possible in terms of behavior to be observed, requiring a minimum of interpretation or value appraisal (such as "good," "weak") on the part of the observer; (3) training observers in the use of the guide; and (4) wherever possible, using more than one judge or observer for a student's performance.

#### C. WHAT YOU DO WITH WHAT YOU FIND OUT

Evaluation of student's progress can and should be a very potent tool in effective teaching. To begin with, effective learning does not occur when the student is just a passive recipient of instruction. Rather, he must be active in manipulating the new material; for example, he answers questions, he engages in discussion, he attempts new skills. But even when he is active, optimum learning occurs only when his activity is evaluated and he is given the results of the evaluation. Only then can he promptly and systematically make the corrective efforts which are the very essence of learning.

The utility of evaluation for the student, then, hinges upon his knowledge of results, knowledge which is usually conveyed through a critique by the instructor. Not just any critique is necessarily helpful, however. To be effective a critique must be prompt; it must be individualized; and it must tell the student very specifically what he did well, what he did poorly, and how he can correct or improve upon his weaknesses. Also, it appears that the impact of a critique is considerably influenced by the student's impression of the extent to which the instructor has a personal interest in the student's progress.

Just as knowledge of evaluation results is highly important to the student's learning so is similar knowledge significant to the competence of your teaching. If you use sound evaluation methods you have an unparalleled opportunity to get a continuing picture of where your instruction is and is not "getting across." By a systematic analysis of student's responses you have a quick view of the strong and weak spots in his learning and can use this as a guide to subsequent instruction.

While a training course or program is in progress, evaluation results are of use almost exclusively for the student and you. Once the training has been completed, communication to the student's supervisor is usually the primary consideration. This topic will not be discussed here because it is covered in OTR Regulation 25-4, setting forth requirements for end-of-course reports on individual students.

#### D. YOUR ATTITUDE

Up to this point we have by -passed reference to a factor that is fundamental to sound evaluation, regardless of the adequacy of the techniques used. This factor is your attitude toward evaluation and, in turn, the attitude which you convey to your students.

Probably because of school experiences with evaluation, many instructors and students think of it exclusively in terms of grading. Furthermore, they have mental, if not spoken, reservations about applying this concept of evaluation to our training. The realization that evaluation need not even involve grading and that the critique aspect of evaluation is its primary training function does not come into clear focus.

Another problem that bothers a number of instructors is a feeling that it is unreasonable to attempt evaluation because there often is no "school solution" or one "best" answer. However, evaluation is not based upon this assumption. Evaluation is concerned first of all with finding out whether your "message" is understood, not necessarily with whether it is accepted as gospel. Even if there is no firm doctrine as to what is "correct" or "best" or even "better" (as is true of a considerable portion of our instruction), you are still concerned with finding out whether or not the material presented in the course is understood (and remembered?), and in knowing what changes and developments in student's concepts have occurred during the course. For material where there are some answers that are better than others, you are additionally concerned with student's learning of these discriminations.

Without question, there is legitimate basis for instructors to be concerned about excessive attention to grading student's work. But there is no legitimate basis for an instructor to feel queasy about periodically evaluating a student's progress as an essential tool of effective instruction. At what point (if at all) grading should enter into the picture is a determination that must be made for each course upon the basis of several pertinent considerations.

The instructor who approaches and carries out evaluation in an apologetic, half-hearted manner would appear to be betraying his own insecurity about the adequacy either of the course or of his teaching of it. The instructor who conducts evaluation with dignity, intelligence, and

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imagination is performing a professional responsibility to himself, his students, his student's supervisors, and the Organization as a whole.

### E. SUMMARY

As a practical summary of this section on EVALUATING STUDENT PROGRESS AND ACHIEVEMENT, we have prepared a two-page check list for instructors. It is believed that you will find this a useful aid in determining for yourself the adequacy of your evaluation procedures and methods.

# INSTRUCTOR'S CHECK LIST FOR APPRAISING THE QUALITY OF HIS PRACTICES AND PROCEDURES FOR EVALUATING STUDENT ACHIEVEMENT

| WHAT YOU WANT THE STUDENT TO LEAR                              | N   |     |
|--|-----|-----|
| 1. Have you made a list of what you expect the student to have |     |     |
| learned by the end of the training?                            | No  | Yes |
| a. Is the list comprehensive - does it cover all funda-        |     |     |
| mentals which you intend the student to learn?                 | No  | Yes |
| b. Is the list precise - does it state exactly what skills     |     |     |
| you expect the student to have, what facts and princi-         |     |     |
| ples you expect him to know, how you expect him to be          |     |     |
| able to use these facts and principles, what attitudes         |     |     |
| or points of view you expect him to have developed?            | No  | Yes |
| 2. For each unit of instruction have you made a list of what   | -   |     |
| you expect the student to have learned by the end of that      |     |     |
| unit?  | No  | Yes |
| a. Is the list comprehensive - does it state every funda-      |     |     |
| mental which you expect the student to learn in that           |     |     |
| unit?  | No  | Yes |
| b. Is the list precise and in detail rather than vague and     |     |     |
| general?   | No  | Yes |
| FINDING OUT WHAT THE STUDENT HAS LEAR                          | NED |     |
| 3. Do you know (rather than just taking for granted) what the  |     |     |
| student has learned by the end of the training?                | No  | Yes |

|    | FINDING OUT WHAT THE STUDENT HAS LEARNED  |    |     |  |  |
|----|---|----|-----|--|--|
| 3. | Do you know (rather than just taking for granted) what the student has learned by the end of the training?  | No | Yes |  |  |
|    | a. Through tests and practical exercises do you find out how well <u>each student</u> has mastered <u>every fundamental</u> by the end of the training? | No | Yes |  |  |
|    |   |    |     |  |  |
| 4. | For each unit or phase of instruction do you use tests and  |    |     |  |  |
|    | practical exercises to check up on each student's progress?   | No | Yes |  |  |
|    |   |    |     |  |  |
|    | a. Do these checks cover all fundamentals?  | No | Yes |  |  |
|    |   |    |     |  |  |
|    | b. If you use written or oral tests, do you avoid leading   |    |     |  |  |
|    | questions (questions which suggest the answer)?   | No | Yes |  |  |
|    |   |    |     |  |  |
|    | c. If you use written or oral tests, do you avoid using ques-   |    |     |  |  |
|    | tions which could often be answered correctly just by   |    |     |  |  |
|    | guessing?   | No | Yes |  |  |
|    |   |    |     |  |  |
|    | d. When you use a practical exercise, do you prepare an   |    |     |  |  |
|    | evaluation guide or check list for use in observing, re-  |    |     |  |  |
| -  | viewing, and critiquing the student's performance?  | No | Yes |  |  |
| 1  |   |    |     |  |  |

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| e.   | Suppose that you and another qualified instructor were each to evaluate the same student's performance on a given test or practical exercise. Would you make essentially the same appraisal of his strengths and weaknesses?       | No    | Yes |
|------|--|-------|-----|
| f.   | Are the tests and practical exercises that you use long enough (or repeated enough) so that the student's performance can reasonably be assumed to represent his real achievement rather than just particularly good or poor luck? | No    | Voc |
|      | or poor tuck?  | No    | Yes |
|      | USING WHAT YOU FIND OUT TO HELP YOUR TEA   | CHING |     |
| 5. W | nen a student has completed a test or practical exercise,  |       |     |
| do   | you give him a critique of his performance?  | No    | Yes |
|      |  |       |     |

| USING WHAT YOU FIND OUT TO HELP YOUR TEACHING   |    |     |  |  |
|---|----|-----|--|--|
| 5. When a student has completed a test or practical exercise, do you give him a critique of his performance?  | No | Yes |  |  |
| a. Is this critique prompt?   | No | Yes |  |  |
| b. Do you point out very specifically what he has done well?  | No | Yes |  |  |
| c. Do you point out very specifically what <u>mistakes</u> he has made?   | No | Yes |  |  |
| d. Do you point out very specifically how he can correct his mistakes?  | No | Yes |  |  |
| 6. For each test or practical exercise, do you make a system-<br>atic analysis of all student's performance to find out where<br>there are common mistakes? | No | Yes |  |  |
| a. Do you then use this information by making an effort to improve "soft spots" in your instruction revealed by these common mistakes?                      | No | Yes |  |  |

## V. EVERYDAY PROBLEMS IN THE CLASSROOM

#### A. DIFFICULT STUDENTS

Sooner or later every instructor must face problems caused by the personality or the behavior of his students. There is the silent student, the verbose student, the slow student, the quick and impatient student, the argumentative student, the apparently "stupid" student, and others. The range of student behavior has its infinite variations and complexities, often intensified and brought to the surface by the pressures in the classroom and study. When the behavior of a student becomes a threat to the efficient running of the course, the instructor must take action. The purpose of this section is not to prescribe to you what action you should take, for that is ultimately a matter for your own decision, but rather to suggest how you may go about making this decision. There are two main sections, the first of which presents some of the possible causes of the more common types of undesirable student behavior and the second lists the factors which the instructor should consider in deciding on a course of action.

### 1. Causes

Diagnosis is the first step in curing. No doctor would prescribe for the symptom of stomach-ache without considering the possibility of appendicitis. The treatment differs with the cause. The instructor too, when faced with a personality problem, must consider possible causes before deciding on a solution. Here for your guidance is a list of possible causes for several common types of disruptive student behavior. The list is not meant to be complete; you will be able to add to it from your own experience.

- a. <u>Silent Student</u>. A student who never volunteers a comment or asks a question, who responds inadequately to questions or not at all, who fails to participate actively in any way; is not necessarily a dolt. His quietness may stem from any one of a number of causes:
  - (1) He may be a naturally reserved and taciturn person who does not talk a great deal under any circumstance.
  - (2) Though articulate enough among friends, he may be very timid about speaking out in a large group.
  - (3) Though not particularly timid, he may feel that his ideas and opinions are not worth expressing.
  - (4) He may really be having difficulty in grasping and in grappling with the subject matter.
  - (5) He may be so uninterested or so concerned about another matter that he does not pay attention.

If you are faced with such a problem, one of the first steps you might want to consider is a private talk with this student. In this way, without necessarily mentioning the problem itself, you may be able to discover the reason for the student's quietness in class and will thus know better how to handle it.

- b. <u>Verbose Student</u>. In some ways a student who talks a great deal represents a greater hazard to the successful management of a class than one who does not talk at all, for the talkative student not only takes up more than his share of the students' time but also tempts the instructor to devote more than his share of time to him and his comments. He is generally a friendly type and one who insists on letting everyone know his point of view on every subject. In order to manage the verbose student you might consider any of these causes:
  - (1) The student may be of a naturally outgoing, exuberant, nature which expresses itself in voluble speech.

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- (2) Though not usually talkative by nature, he may be so interested in the subject or so well-informed that he feels compelled to express his ideas frequently and at length.
- (3) He may be using talk as an unconscious defense mechanism to cover real or fancied inadequacies.
- c. "Stupid" Student. You, the instructor should approach the diagnosis of stupidity with great caution. First, as has already been mentioned, it is wrong to assume that a silent student is stupid; his silence may stem from quite different causes and call for an entirely different approach to diagnosis. Second, you should bear in mind the probability that a student who seems stupid in one subject may not be so in another; brilliant economic analysts fail in a language class; astute negotiators of high policy may find themselves in trouble in an operations course. Moral judgments by the instructor not only will fail to help him solve the problem but may be quite inaccurate as well. With these comments in mind, you may find helpful the following summary of some of the possible causes of apparent stupidity:
  - (1) The student may be insufficiently motivated for the course to care about his performance.
  - (2) Although willing and interested, he may be prevented by the pressure of other duties or of private affairs or worries from completing required assignments.
  - (3) He may be the slow, grinding type, who takes far longer to grasp new material than the average person. With such types the grasp or learning when it finally is achieved is sometimes more thorough and lasting than that of the average student.
  - (4) Although average or above-average in other fields, he may for various reasons have great difficulty with the subject at hand. He may have insufficient training or background to handle the subject.
    - (5) He may simply lack the intellectual requirements to be a good student.

There is some overlapping in the three main listings above, since a given cause may produce two different symptoms. In practice, too, no problem is so neatly analyzable as these listings might suggest since most problems are combinations of many different factors. But the important thing for you as an instructor is not to know the precise number of causes for any given problem, which is hardly possible, but to realize the fact that there are many different causes and that each one or combination deserves different treatment.

#### 2. Bases of Decision

Determining the cause of a problem is the first step in solving it and does not automatically lead to the correct choice of a solution. The instructor who feels that he has discovered the reason for a student's behavior must next weigh the advantages and disadvantages of various courses of action to help the student and thus help the class. Here you are confronted by a welter of choices. What will help one student may harm the next. What is successful one day may be catastrophic the next. What worked in one course may fail in the next. How are you to decide what action to take? Below are listed some of the factors which you should take into consideration in coming to a decision:

a. Knowledge of the student. In trying to find out the cause of the specific symptom in question, you have already begun to become acquainted with the student as a personality. There are also other things which it will be helpful to know, including his general background and experience, his education, and his performance in other courses and in his regular job. Much of this sort of information can be obtained from official files. For the rest you may rely on talks with the supervisors and former instructors and with the student himself; all with the goal of determining which approach is most likely to have the best results for that particular student.

- b. Know Oneself. Instructors too, have differing personalities, and students may react to them in different ways. One instructor may successfully use a hearty, blunt, jocular approach; another may achieve the same results with quiet, reasoned discussion; a third may have the talent to vary his own approach with the student. With some experience an instructor should be able to recognize what effect his own personality has on students. Does he seem to irritate them more everytime he speaks? Does he bore them? Does he have humor enough to win response in order to make a point? Does he argue convincingly? An instructor whose jokes help to establish an atmosphere of interest and enthusiastic participation, draw out the quiet student, or pleasantly quell the loquacious one, may continue to joke in good conscience, but an instructor whose jokes seem to fall flat or cause personal resentment should recognize the fact and change his approach. You must be very sensitive to the reactions of your students and consider them in your personal conduct of the class--remember, you are not a dictator!
- c. Sense of the class. Classes have a way of developing a kind of corporate personality of their own. There are happy, lively classes; slow, bored classes; intense, no-nonsense classes, and various others, and these moods can vary from day to day. The instructor can sense the kind of class and should act accordingly. As an instructor, you should consider establishing rules of procedure for the class; i.e., no talking or comments without recognition from the instructor, a limit of two minutes per individual comment, each student may express his views only once per subject, etc.
- d. Your past experience. Every problem that arises will help to solve a future problem. As you accumulate more and more experience you will be able to compare each problem case with past problems and on the basis of past experience you may decide on the advisability of applying the same solution again.
- e. <u>Common sense</u>. In the long run this is the all-encompassing and over-riding criterion for any action. Frequently a decision thought to be made on the basis of common sense alone is in actuality an unconscious amalgam of all the factors mentioned above. However, there may be times when a conscious consideration of these factors may point to a solution which your common sense (or intuition or what you will) tells you would be wrong. In such a case you should use your common sense. That is what you have it for!

Just a word of caution and encouragement. Beware the too facile, psychoanalytical approach. You are not supposed to be a psychiatrist, nor are you expected to have infallible judgment. But you do work with people and you are supposed to have an educated layman's knowledge of human minds and human relationships. You will make mistakes, but from mistakes comes experience, and experience makes you a better instructor.

It is almost impossible to list all the classroom situations confronting an instructor. Here are a few common classroom situations and some suggestions which have proved effective in handling them.

# Situation

- The student who wants to impose his opinion on everyone else--the knowit-all.
- The student who wants to argue. This
  type is always trying to "cross up" the
  instructor. He will quibble over the
  most trivial detail and loves to get the
  other fellow's goat.
- The student who thinks you are telling him how to run his job and resents it.
   He may feel that he knows his job better than anyone else.

#### Suggestions

Encourage other members to comment on his remarks freely. Let the rest of the group take care of him. Build up the confidence of the group in themselves so that they will not be imposed on by this type.

The first rule in this type of situation is to keep cool. The instructor should not lose his head nor allow others to do so. Use questions. Draw out the individual and turn him over to the group. Give him enough rope to make some absurd, foolish, or far-fetched statements. Keep students from getting personal. Get the opinion of the majority.

Get him to feel that this experience can be valuable to others and that the purpose of the instructor is to exchange ideas and to pool experiences.

4. The over-talkative individual--the one who wants to do all the talking.

Be very tactful but interrupt and ask others to comment. It may be necessary to ask him politely to refrain from talking and to give someone else a chance. If it cannot be done without embarrassing the individual, a private talk would be advisable. Fail to recognize him. Don't look at him when you are presenting a question. Establish a rule that no student should speak too long on any question until everyone has had a chance to talk.

5. The shy student.

Call on him by name to give an opinion, ask him an easy question he is sure to answer well, and then praise him. Find something for him to do to help you in the instruction; for example, to hang up charts, assist in a demonstration, or make a report.

6. The disinterested student.

Ask direct questions affecting his office. Ask for his advice. Quote tactfully some statement he has made to you outside the class. Pick out something in his office and hold it up as a good example. Carefully bring up things in which you know he is interested.

7. The student who attempts to get your opinion instead of giving his.

Refer the question to the group and then to him.

8. The student who carries a personal grudge.

Avoid discussion about the source (if known) of his grudge. Explain that any problem discussed must be for the greatest good to the greatest number and that no personal peeves will be discussed. If the grudge is between two individuals in the group who hold a personal grievance against each other, avoid discussion between them. Possibly reschedule one of them for another time with a different group.

The student who is wrong but others in the group, out of respect, refuse to correct. Always avoid direct criticism, sarcasm, and ridicule. Use indirect methods. Analyze a similar case without reference to him personally. Talk to him privately.

#### B. MOTIVATION

Motivation, as stated in a previous section of the <u>Guidelines</u>, is the very heart of the learning process. Adequate motivation not only sets in motion the activity which results in learning but also sustains and directs it. Reflection, interest, effort--all outcomes most desired by the instructor and most valuable to the pupil--spring into being with adequate motivation. The words "incentive," "interest," "drive," and "purpose" are various facets of basic motivation.

Intrinsic and extrinsic are two commonly recognized forms of motivation. The most effective form is intrinsic, in which the student's drive or satisfaction is secured by making the subject matter significant or meaningful to him (e.g., the student's own desire and need to learn the skill of repairing a radio). This type of learning carries its own reward. Interest is within the activity and binds the student to his work. Frequently, in contrast, learning must often proceed in the absence of intrinsic motivation. Intellectual immaturity and lack of sensitivity to ultimate consequences and goals may stand in the way of intrinsic appeal. Extrinsic motivation, therefore, is so called only because it is external to the learning activity itself (e.g., the student's desire to obtain a good grade to please his supervisor). It is not entirely artificial. It should

be built on the foundation of some existing natural response or desire which is intrinsic to the nature of the student. Psychologists disagree whether such tendencies as mastery or dominance, emulation or rivalry are inherited or acquired, or partly one and partly the other. Instinctive drives are the chief sources of spontaneous attention and painless effort. They are enormous resources of potential energy at the disposal of the instructor and the student and await only judicious employment and direction. Some of the more common forms of extrinsic motivation upon which the instructor may capitalize are:

- 1. Praise and Blame. These incentives are most effective when they come from persons held in esteem by the learner (e.g., the instructor). Some studies indicate, however, that regardless of age, sex, or initial ability, praise is the most effective of the incentives. Reproof or blame seems to decline in effectiveness for all students.
- 2. Rewards and Punishment. These are more concrete expressions of praise and blame. They are, perhaps, the least desirable forms of motivation. Punishment that is too severe or inflicted when the reason for punishment is not clear and acknowledged may breed resentment, antagonism, and desire to avoid the form of learning to which it is attached. On the intrinsic side, the joy of beholding a task well done is the best reward and incentive and punishment by natural consequences (e.g., a failure due to lack of effort), carries its own moral to the student.
- 3. Rivalry. Rivalry between individuals is the least desirable type in that it may tend to breed resentment, jealousy, and an excessively competitive spirit. Rivalry between groups stimulates but needs control. Self-rivalry or rivalry in the form of competition with one's past record is the most valuable type. Exaggerated competition is not encouraged, yet marks, grades, scholarship contests, honor rolls and the like are still too often considered reputable incentives in an effort to stimulate and maintain intellectual endeavor.
- 4. Knowledge of Progress. Self-display or elation in the field of creativeness are the instincts operative here. Experimental evidence substantiates the common belief that a concomitant realization of one's own progress stimulates further effort. Opportunities for successful accomplishment should be provided in the classroom. Too frequent failures dishearten students and develop a sense of frustration. Subject matter work should therefore be definitely aimed within the capability, capacity, and interest of the pupil, but difficult enough to challenge effort in the accomplishment.
- 5. Other Sources. The desire for social approval, the urge for mastery or dominance, to excel, to overcome opposition, are other aspects of extrinsic motivation. To allow these free and unrestrained outlet is disastrous. Natural impulses in themselves are usually neither good nor bad. They become so to the extent that they are directed into desirable or undesirable channels of action.

#### C. INDIVIDUAL DIFFERENCES

It would be meaningless for us to discuss at any length the problems of individual differences or the fact that these individual differences exist in the classroom. Every instructor who has taught more than one classfully appreciates that all students differ individually in every manner imaginable. Individuals differ in their ways of learning and in their rates of growth and development. For example, people of the same age do not grow and learn at the same rate; learning is continuous, even though the rates are varied; individuals may be good in one subject area and poor in another. For these reasons the organization of your class and instruction plays a major role in learning. Our training is such that so called "ability grouping" is not usually desirable or feasible. This situation, however, can somewhat be alleviated by the variations possible in your methodology since we recognize that some students learn best by reading, some learn best by participating in discussions, some learn best through the use of visual and auditory aids, and some learn best by listening. Since it is almost impossible to anticipate and predetermine any kind of class groupings, it is a wise instructor who keeps his class instruction and organization flexible to meet the needs of his individual classes and who makes a determined effort to adapt his instruction to the class rather than force the class into a preconceived and rigid pattern of instruction. The problem facing the instructor is what can he do with his fewer students who

differ appreciably from the greater number of average-type students in his classroom? Several suggestions can be offered:

- 1. Individual reading assignments very frequently balance these differences. Some students can read the assignment once and assimilate all the necessary knowledge. Slower students may have to read the assignment several times and since the reading may be accomplished either within or outside of class, they have an opportunity to proceed at their own pace. This is why, insofar as possible, the instructor should have as much written material (normally given in the lecture) to give to his students and they can proceed at their own pace.
- 2. In the teaching of certain skills when students practice the skill it is frequently a good technique for the instructor to select one or more students who are adept in accomplishing the skill to act as tutors for the slower students. The instructor must set up this procedure in advance with the class and inform them that he plans to select one or more students who have learned the skill to assist him in helping other students. Thus, he extends his capability to instruct more students and frequently finds that such a technique aids in increasing student proficiency and helps establish a more equal status of learning among the class. In order to save embarrassment, particularly to the student who learns quickly, the instructor can rotate leadership among the several more accomplished students.
- 3. Very frequently the instructor must coach or assist the slower students individually. Sometimes this coaching can be done during the regular class hours while the rest of the class is completing some assignment. However, it may frequently involve out-of-class sessions in which the instructor devotes specific attention to the slower student. This should never be done with the attitude of punishing, but with one of assisting, guiding, and counseling the student who is having a difficult time.
- 4. Use the technique of small group instruction as much as possible and feasible. As we have suggested in a previous section, this technique permits more individual activity and expression. The division of a large class into smaller groups is frequently a good technique to account for individual differences. This, of course, requires the instructor to have additional assistance or perhaps as before, to use one or more of his better students to act as assistant instructors. However, it is desirable that the smaller groups are led by staff members unless one of the objectives of the training would be to give students the opportunity and experiences necessary to lead groups. In such case, opportunity should be provided to all students to take turns in leading the groups.
- 5. In case of exceptionally gifted students, the instructor should have various types of additional assignments for these students. These "fringe benefits" assignments should definitely contribute toward the accomplishment of the objectives and should be clear in the student's mind that it is not "busy work" assigned to keep him out of mischief while the instructor devotes his attention to the remainder of the class.

#### APPENDIX A

#### **BIBLIOGRAPHY**

This bibliography is not definitive. The entries which we have selected can be included because they contribute to the general objective of improving the instructor. Some are not recent publications but all contain proven principles, ideas, and suggestions relative to good instructional techniques. We wish to encourage you to read other educational references. Reference items pertaining to subjects taught in the schools of OTR were not included unless they were known to be appropriate to a diversity of instructional interests. Such bibliographic references are normally contained in each school office and the new instructor is encouraged to consult with such references in order to increase his subject matter background.

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